THE AIR FORCE RECORDS MANAGEMENT PROGRAM: A PARADIGM SHIFT FROM COMPLIANCE TO GUIDING PRINCIPLES IN AN EVER-CHANGING INFORMATION ENVIRONMENT

THESIS

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Abstract

Records management (RM) is the "…field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including the processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records" (Information and documentation -- Records management -- Part 1: General, ISO/CD 15489-1: 2001). RM consists of multiple interrelated activities including identifying, classifying, prioritizing, storing, securing, archiving, preserving, retrieving, tracking, and destroying records. The goal of RM tends toward providing a life-cycle strategy for handling records from the time they are created until they are archived or disposed. However, many abstract laws and regulations linger today from periods when paper records were dominant which do not map well to today's information technology–centric environment.

The purpose of this research is to examine and understand how RM is implemented in United States Air Force (USAF) environments to determine if the underlying principles and objectives of RM are being achieved. To accomplish this research, an exploratory case study was performed on two representative USAF organizations: an intelligence organization and an educational organization. These case studies provide insight into how RM regulations and guidance are interpreted, implemented, maintained, and evaluated in USAF environments. In addition, organizational behavior was analyzed pertaining to the usage of shared information

technology storage in order to evaluate how records are created, shared, stored, and disposed in operational environments.

The research revealed that there is a general lack of clarity regarding what constitutes a record due to the vague and overly broad definitions used in RM guidance documents. Organizations struggle with justifying the increasing costs of complying with RM mandates with the promise of future intangible benefits. Amidst constrained operating environments, organizations are more focused on simply passing compliance checks rather than establishing a culture which embraces RM principles in everyday practice. Many of the overarching theories and ideas involved in RM are highly romanticized. However, leaders must change their perspective to embody RM less as a set of expensive mandates and more as a focus on the spirit of the regulations. This new perspective should ultimately shift the focus of RM away from rigid rules and towards guiding principles. Policy modifications which incorporate these findings will enable the USAF to better educate leaders, those creating, and those maintaining the records and enable them in understanding why RM serves a critical role, how it is best implemented, and how to ensure mission assurance in the ever-changing information environment.

To my darling children.

Acknowledgments

Years ago, there was a television commercial that aired quite frequently. It began with a burly man in a leather jacket walking briskly out of a 1950's diner towards his motorcycle. A woman in a waitress apron bursts out of the diner doors behind him and pleads, "Please! Take me with you!" The man gazes off, into the distance and replies, "Sorry, babe—I was born to ride alone." A look of confusion crosses her face as she points behind the man and asks hesitantly, "Then…who are they?" The camera zooms out to reveal ~200 people standing behind him, some in construction hats and others in suits and polo shirts. In essence, they are the service reps, executives, technicians, line mechanics, and crane operators for his cellular phone company. He glances back and says, "Oh, them? They're my network." This is precisely how conducting research is—many feel they're 'riding solo,' when in reality, those 'in the network' make final products possible. I'd like to begin by thanking the Chief Technology Officer, Records Management, and FOIA representatives who were the research sponsors, for bringing such a fascinating topic to the forefront. Your futuristic perspectives and ability to color outside the lines when needed is refreshing. To my thesis advisor, Dr. Michael R. Grimaila, thank you for your unwavering support, mentorship, and guidance. This was a "wicked hard" problem! To the SC Directorate, thank you for your zeal in sharing delicate balances between the Information Sciences and IT perspectives and Dr. Nurre, thank you, for aiding with the Ops Research lens on this work. To the good Lord, I am most grateful for the strength and endurance to complete this challenging endeavor and to everyone else in this vast network- family, friends, commanders, professors, bosses, and colleagues– past and present – thank you, as well…

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Abbreviations Used

AF	Air Force
AFB	Air Force Base
AFI	Air Force Instruction
AFIT	Air Force Institute of Technology
CAC	Common Access Card
CFR	Code of Federal Regulations
CMM	Capability Maturity Model
CS	Communications Squadron
DBMS	Database Management System
DISR	DoD Information Technology Standards Registry
DDMS	DoD Discovery Metadata Specification
DOI	Department of Interior
DoD	Department of Defense
DoDD	Department of Defense Directive
EO	Executive Order
E-mail	Electronic Mail
EPA	Environmental Protection Agency
ERM	Electronic Records Management
FIPS	Federal Information Processing Standard
FO	Focused Objective
FOIA	Freedom of Information Act
FRC	Federal Records Center
GAO	Government Accountability Office
GARP	Generally Accepted Recordkeeping Principles
GIG	Global Information Grid
GOTS	Government Off-the-Shelf
HTML	Hyper Text Markup Language
ICT	Information and Communication Technology
IEC	International Electrotechnical Commission

IG	Inspector General
IM	Information Management
ISACA	Information Systems Audit and Control Association
ISO	International Organization for Standardization
IT	Information Technology
KM	Knowledge Management
KOM	Knowledge Operations Management
LAN	Local Area Network
MAJCOM	Major Command
NARA	National Archives and Records Administration
OAIS	Open Archival Information System
OPR	Office of Primary Responsibility
OSD	Office of the Secretary of Defense
PDF	Portable Document Format
PKI	Public Key Infrastructure
PL	Public Law
RBV	Resource-Based View
RIM	Records Information Management
RM	Records Management
RMAs	Records Management Applications
RQ	Research Question
SAF	Secretary of the Air Force
SME	Subject Matter Expert
SOR	System of Records
SORN	System of Records Notice
STD	Standard
US	United States
USAF	United States Air Force
USC	United States Code

THE AIR FORCE RECORDS MANAGEMENT PROGRAM: A PARADIGM SHIFT FROM COMPLIANCE TO GUIDING PRINCIPLES IN AN EVER-CHANGING INFORMATION ENVIRONMENT

I. Introduction

Overview

Records management (RM) is defined as the "…field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including the processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records" (Information and documentation -- Records management -- Part 1: General, ISO/CD 15489-1: 2001). RM consists of multiple interrelated activities including identifying, classifying, prioritizing, storing, securing, archiving, preserving, retrieving, tracking and destroying records. The goal of RM tends toward providing a life-cycle strategy for handling records from the time they are created until they are eventually archived or disposed (Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 1: Overview and statement of principles, ISO 16175-1:2010).

A significant amount of research has been devoted to Records Management investigating ways to make the processes mandated by the Department of Defense (DoD) more efficient, more automated, and less burdensome(Balda, 2004)(Gaines, 1994)(NARA, 2007)(Prescott, Underwood, & Kindl, 1995)(Snoddy, 1996)(Hobbs, 2005). However, few of these research efforts conducted an in depth analysis of the concept of Records Management in order to determine its guiding principles so that the great divide

between the current DoD approach which encompasses outdated policies intended for paper-based work eras could be reconciled with modern accepted business practices.

Today's American government operates with the expectation of heightened transparency, accountability, and accuracy in reporting. Additionally, both information and technology are evolving at intense speeds and Air Force (AF) leaders and stakeholders seemingly require more and more information and analytics in this data-driven world. The importance of having information in a timely manner is critical for good decision-making and one would assume, based on the title and expression "records management," that the US Air Force "Records Management Program" within each unit would serve an important aspect in the organization, inventory, and retrieval of official information when required or requested.

Problem Statement

Unfortunately, it appears that the existing AF Records Management program is a misnomer and adds more non-value added activities and constraints to units based on Air Force regulations and interpretation of federal laws than it does usefulness. Federal "powers that be" seem disillusioned or perhaps they, too, are overwhelmed by the current state of information, which may be why the DoD continues to recycle policies from decades before, causing impractical mandates and unrealistic expectations to linger.

Research Objectives

The purpose of this thesis research is to understand the philosophy, guidance, implementation, operation, and evaluation of records management activities within United States Air Force (USAF) environments. Once understood, this research seeks to

identify the strengths and weaknesses of RM activities so that recommendations can be made to improve what is most valued by stakeholders in the context in which it is being applied. It is believed that this will translate to improved efficiencies, reduced costs, and organizational acceptance when accomplishing RM in USAF environments.

Research Hypothesis

The hypothesis of this research is that the existing guidance governing the implementation of Records Management within USAF environments is narrow, cumbersome, and ineffective and does not accurately reflect the way business is really conducted in terms of organizational behavior, nor properly encourage adherence with the underlying principles of modern RM. Additionally, the implementation of RM policies, directives, instructions, and guidance verbatim as written, is far too expensive to implement unless compartmentalized to a high degree. In order to test this hypothesis, an exploratory case study of two USAF organizations will be conducted. The data collected from the case studies will be used to answer the primary research questions.

Primary Research Questions

To achieve the objectives of this research discussed above, seven primary research questions listed in Table 1 will be investigated and answered.

Table 1. Primary Research Questions

Primary Research Question	Description
RQ1	What is Records Management?
RQ2	What are the policies, instructions, and regulations governing Records Management?
RQ3	How is Records Management implemented within United States Air Force environments?
RQ4	How is Records Management compliance measured within the United States Air Force?
RQ5	How effective is the United States Air Force Records Management process at achieving the underlying principles of Records Management?

RQ6	What is the organizational culture of Records Management within the United States Air Force?
RQ7	How can Records Management be improved within the United States Air Force?

Focused Objectives

The following seven focused objectives (FO), in Table 2, help to concentrate on how the primary research questions and each potential benefit (PB) of the research come together. Each of these FO contributes to the overall purpose of the research and provides the insight necessary to answer the research questions.

Table 2. Focused Objectives

Focused Objectives	**Description**	**Primary Research Questions Addressed**	**Potential Benefits of Research** (see Table 3)
FO1	Develop a set of general themes, underlying principles, and tenants of Records Management.	RQ1	PB1
FO2	Identify the policies, instructions, and regulations governing Records Management within the United States Government and the United States Air Force.	RQ1, RQ2, RQ4	PB2
FO3	Determine the strengths, weaknesses, opportunities, and threats of implementing Records Management within United States Air Force environments.	RQ3	PB3, PB5
FO4	Identify the existing techniques and methods used to evaluate the effectiveness of Records Management in United States Air Force environments.	RQ2, RQ3, RQ4	PB2, PB3, PB 5
FO5	Develop a means to measure the actual effectiveness of Records Management in United States Air Force environments in light of the primary objects of Records Management.	RQ1, RQ5	PB3, PB4
FO6	Identify stakeholders and determine their awareness level of the importance of Records Management in United States Air Force environments.	RQ2, RQ5, RQ6	PB5
FO7	Propose new guidance, policy, instructions to improve the effectiveness of Records Management in United States Air Force environments.	RQ4, RQ5, RQ7	PB6, PB7

Benefits and Implications of Research

This research will provide insight into the effectiveness of Records Management as implemented in United States Air Force environments. It is believed that research findings will help inform the creation (or revision) of new policies, instructions, guidance, evaluation methods, and business process reengineering to improve the overall

effectiveness of RM. Further, the research is expected to raise awareness and shed light on a complex social, technical, and political activity present in every modern USAF environment. Awareness of challenges is the first step to adapting business processes and policies to achieve a more efficient and effective RM process. Table 3 identifies and summarizes seven specific potential benefits of the research.

Table 3. Potential Benefits of Research

Potential Benefit	Description
PB1	Identify needs and priorities for future investigation.
PB2	Develop metrics for evaluating Records Management activities.
PB3	Increase the value of Records Management activities.
PB4	Provide value to Records Management stakeholders.
PB5	Increase stakeholder awareness about the importance of Records Management.
PB6	Increase compliance with Records Management guidelines.
PB7	Improve the ease at which Records Management can be implemented.

Research Methodology

In order to answer the research questions, this research employs a hybrid research methodology consisting of three main parts. The first part involves conducting a literature review to identify the relevant background literature related to Records Management (RM), also known as Records Information Management (RIM). Specifically, a review of the history and seminal RM documents, United States (US) governmental regulations and guidelines, Department of Defense (DoD) and Air Force (USAF) instructions and policies will be presented. Second, a case study of two representative USAF organizations will be conducted to provide insight into the strengths and weaknesses of USAF RM programs. This methodology is appropriate according to Yin based upon the fact this situation is common to other businesses and government agencies(Yin, Applications of Case Study Research, 2003). Interviews with subject matter experts and organizational stakeholders will be conducted to identify the strengths,

weaknesses, challenges, and barriers when implementing and maintaining USAF RM programs. Finally, synthesis of the research findings will be used to develop recommendations on how to improve RM in USAF environments.

Assumptions/Limitations

First and foremost, this work is scoped to address the "The Air Force Records Management Program," a Commander's program subject to inspection, and understand the way it is implemented in many administrative environments within the USAF. It is important to note that the major observations made in this thesis are limited to this particular program and the way policy governs the identification and handling of records. It is not necessarily indicative of the "real" way in which operational information in the USAF is handled. This research may not apply to specific functional areas such as those pertaining to the fields of: medical, financial/accounting, legal, operational, national defense, or world-wide/national statutes which have well established and structured records management programs.

Additionally, not all facets of information theory, information philosophy, Records Management software, or Information and Communication Technologies (ICTs) can or will be addressed in this work. There are a significant number of related topics, but only the most relevant information necessary to answer the research questions is included. In addition, research regarding the USAF problem due to lack of storage space has been omitted, to include e-mail issues and other shared communication and data spaces which fill up rapidly based upon information growth. With regards to additional AF topics, the term 'cyber' is omitted from this paper, although many could argue this

topic is encompassed since RM and electronic records management (ERM) are attempts to organize information in the physical, cognitive, and electronic (i.e. cyber) domains.

Deduplication and version control are not included, but would certainly warrant further research. Questions pertaining to the behavioral science surrounding how many systems individuals are responsible for working with, where they choose to work electronically, how they back up their information are all related topics that ultimately add more elements to understanding the chaos/confusion surrounding records management, but they have been omitted from the scope of this research, as well.

Implications

Action is required, in particular with current policies and mandates required. The more leaders choose to ignore the complexity of data abundance regarding the explosion of information and records, the more outdated policy becomes, which translates to a more compartmentalized viewpoint of RM.

Aging or obsolete laws and regulations cause much confusion and hinder the ability to keep up with technological advancements, changing modes of communication, and evidence creation. The realization that RM requires an altruistic mindset from a large number of participants is a critical component to paving the way ahead.

Leaders should focus these ideas and efforts into their respective organizations and incorporate strategic perspectives that are forward-thinking and structural, yet flexible and adaptable (based on the ever-changing information realm), all while focusing on risk management and due diligence in identifying value-added within the process to encourage the right amount of participation.

Preview

This chapter describes the goals and objectives of this research and motivates the need for understanding how Records Management programs are implemented in USAF environments so that recommendations can be made to improve efficiency, reduce costs, and assure effectiveness. Chapter 2 will review the relevant background literature related to Records Management in commercial, governmental, and military environments. Chapter 3 will present the research methodology used for conducting the research and answering the research questions. Chapter 4 will describe, in detail, the results of the research and identify opportunities to improve the Records Management capabilities of USAF organizations. Finally, Chapter 5 will present the major conclusions of the research and provide recommendations on future research.

II. Literature Review

Chapter Overview

The purpose of this chapter is to present the relevant background literature on Records Management (RM) required to answer the research questions stated in Chapter 1 of this thesis. First, seminal RM documents are reviewed with the purpose of identifying the background, the need for, the philosophy, and premise of RM activities. Second, United States (US) governmental regulations and guidelines specific to RM are presented to identify the regulatory and compliance environment under which all US governmental organizations must operate. Third, Department of Defense (DoD) and United States Air Force (USAF) policy and instructions are reviewed to reveal defense specific guidance on RM activities. Specific attention is paid to guidance provided by the Air Force Records Management (AF RM) program, which dictates the implementation of RM in USAF environments. Finally, a review of how compliance with RM policy and instructions within USAF environments is presented with the objective of revealing how RM activities are measured.

Defining Records Management

The first realization one must come when studying records management, is that Records Management (RM) is a "rigorous, efficacious form" of Information Management (IM), where IM is the "means whereby the existence of needed information can be discovered by managers, action officers, and support staff" (Barry, 2002). This is why oftentimes RM is often referred to as Records Information Management (RIM). The second realization is that a transition has occurred with information creation and

communication, meaning records creation is now based upon society's use of Information and Communication Technologies (ICTs). This means Records Management in the 21st century is amidst a transition toward more Electronic Records Management (ERM) in lieu of strictly paper-based systems (Myburgh, 2005). Third, while many consider ERM a more localized issue, based upon where ERM programs generally fall in the realm of responsibility, ERM is not strictly a localized issue, but rather, a global area of concern. For this reason, there is expansive work that has been accomplished in this topic and many international standards (ISO's) exist which address the topic of RM. The most critical takeaway is that not every country nor organization nor individual shares the same perceptions or viewpoints in regards to the management of information and/or records (ARMA International, 2014).

Lastly, there is a long, growing list of inter-related concepts and terms to be aware when attempting to understand RM and ERM. While this list is not all-inclusive, a good start is to include terms such as: Information Sciences, Information Management (IM), Knowledge Management (KM), electronic record-keeping, archival, Enterprise Information Management (EIM), Enterprise Content Management (ECM), Business Intelligence (BI), Business Analytics (BA), regulatory compliance, disaster recovery, Generally Accepted Recordkeeping Principles (GARP), Information Governance, Information Lifecycle Management, e-discovery, Enterprise Document Management (EDM), data management, version control, deduplication, many topics and issues regarding "big data," and more. As will be discussed in this chapter, Records Management is more than a simple idea or charge. RM is a philosophy, a subset of the

Information Sciences, a practice, a mandate, a necessity, and whatever an organization or individual chooses to perceive it as in order to add value to an information system.

RM: International Perspective

Perhaps the best place to begin is with the fact that Records Management, or in today's context Electronic Records Management, has several international guiding principles. These include ISO 15489, the International Standard on Information and Documentation, ISO 16175-1:2010 (Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 1: Overview and statement of principles, ISO 16175-1:2010), ISO 16175-2:2011(Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 2: Guidelines and functional requirements for digital records management systems, ISO 16175-2:2011), ISO 16175-3:2010 (Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 3: Guidelines and functional requirements for records in business systems, ISO 16175-3:2010) , ISO 30300:2011 (Information and documentation -- Management systems for records – Fundamentals and vocabulary, ISO 30300:2011) and Information Standard 40 (Information: Recordkeeping, IS40, 2014)

According to a guide published in 2010 by the British National Archives regarding good practice recommendations in the Code of Practice on Records Management, the guide states there is much debate among records managers and information managers about what terms such as information and records actually mean. For example, Records according to the Code are defined from ISO 15489: 2001

(Information and documentation -- Records management -- Part 1: General, ISO/CD 15489-1: 2001)(Information and documentation -- Records Management -- Part 2: Guidelines, ISO/CD 15489-2: 2001) as follows:

'*Information created, received, and maintained as evidence and information by an organization or person, in pursuance of legal obligations or in the transaction of business.*'

Records can be in any format, meaning it is 'irrespective of the technology used to create and store them or the type of information they contain.' The code further states 'therefore, not only paper files series of digital records management systems but also business and information systems(The British National Archives, Guide 1, 2010, p. 2), to include case management, finance, geographical information systems, and contents of websites.

The Freedom of Information Act (FOIA) provides a right of access to 'information' and also uses the term 'records.' Many regard records as a subset of information with particular qualities that differentiate records from other information, to include structure, context, and authenticity that originate from the managed environment in which records are kept that gives them "*value as reliable evidence of past actions and decisions*" while others feel as though the widespread use of information communication technologies (ICT's) has led to the erosion of the distinctions between records and information, therefore, they use the terms interchangeably (The British National Archives, Guide 1, 2010, p. 2).

These ideas closely align with a 1997 article by an archivist named Richard J. Cox who wrote that scholars are still challenged with defining words like "information"

and “knowledge,” and despite its generally more concrete and tangible nature, the word “record” encompasses so many ideas as well. He explains one of the most widely accepted definitions or way to understand a record is “the evidence of a transaction” (Cox, 1997). Another idea he highlights in his work is the complexity involved with how the human brain processes memories and situations. This thought ties in with many philosophical ideas regarding context and perception. No matter who reads a textual definition, based upon an individual’s experiences, individual point of view, different people may perceive things differently. As the authors of a 2004 nursing study noted, “reality can be interpreted in various ways and the understanding is dependent on subjective interpretation” (Graneheim & Lundman, 2004). The idea that text can involves multiple meanings and is subject “to a degree of interpretation” can be traced back to philosophers such as Immanuel Kant who have written at length on the subjective measures to include judgments, concepts, and two great branches of philosophical inquiry, the theoretical and the practical. There is a great divide between what is, and what ought to be. What this means is theoretical philosophy tends to provide focus to “cognition of sensible nature,” while practical philosophy generally alludes to “moral action in” and on sensible nature. These ideas were reiterated during a meeting with a sponsor for this research with regards to records management vocational training and training intended for mass audiences (SME#1, 2014).

So, while there are many different perspectives by which to view records, the question of what is a record becomes unique to the lens by which it is evaluated. For this reason, an evaluation from a government-specific lens is important in the context of this research.

US Federal Lens: Defining a Record

From a federal regulations context, there are multiple ways to define an official record. The following table demonstrates instances of the following with the underlined phrases showing translations that differ from 44 U.S. Code, 3301:

Table 4. Federal and USAF Record Definitions

Source	Date	Definition
(44 U.S. Code Chapter 33, 2012)	3 Jan 2012	…records include all books, papers, maps, photographs, machine readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the United States Government under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government or because of the informational value of data in them. Library and museum material made or acquired and preserved solely for reference or exhibition purposes, extra copies of documents preserved only for convenience of reference and stocks of publications and of processed documents are not included.
DoD 5015.2 "DoD Records Management Program"	21 Nov 2003	…records include all books, papers, maps, photographs, machine-readable materials, and other documentary materials, regardless of physical form or characteristics, made or received by an Agency of the United States Government under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that Agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government or because of the informational value of the data in them. A record covers information in any medium, and includes operational logistics, support and other materials created or received by the DoD Components in training, contingency, and wartime operations as well as in all routine and peacetime business.
AFPD 33-3 "Information Management"	1 March 2008	Information, regardless of medium, detailing business transactions. Records include all books, papers, maps, photographs, machine-readable materials, and other documentary materials, regardless of physical form or characteristics. Records are made or received by an Agency of the United States Government under Federal law or in connection with the transaction of public business. Records are preserved or appropriate for preservation by that Agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government or because of the value of data in the record. (Reference DoD 5015.2 STD and 44 U.S. Code 3301)
AFI 33-321 "Authentication of Air Force	1 Apr 2000	Para 1.3.1. Record. Records include all books, papers, maps, photographs, machine-readable materials, and other documentary materials, regardless of physical form or characteristics, made or

Records"		received by the United States Air Force under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government or because of the informational value of the data in them. A record covers information in any medium, and includes operational logistics, support and other materials created or received by the Air Force in training, contingency, and wartime operations as well as in all routine and peacetime business. Electronic media is the choice for use, storage, and management of Air Force records. Paper records should only be created to meet a historical and/or legal requirement.
AFMAN 33-363 "Management of Records"	1 May 2008, updated 29 Aug 2013	1.3. Records are the information that we preserve and manage. 2.4.2. All information created in or received while carrying out the Air Force missions is categorized as a record.
AFI 33-322 "Records Management Program"	(4 June 2012)	Para 2. Definition of Records. Consistent with the definition of "records" used in 44 U.S.C. § 3301 records include ―all books, papers, maps, photographs, machine readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the United States Government under Federal law or in connection with the transaction of public business and is preserved or is appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policy, decisions, procedures, operations, or other activities of the Government or because of the informational value of data in them. Materials exempt from the definition of records include extra copies of documents kept only for reference, stocks of publications and processed documents, and library or museum materials intended solely for reference or exhibit.
Freedom of Information Act (FOIA) Office		Enacted on July 4, 1966, and taking effect one year later, the Freedom of Information Act (FOIA) provides that any person has a right, enforceable in court, to obtain access to federal agency records, except to the extent that such records (or portions of them) are protected from public disclosure by one of nine exemptions or by one of three special law enforcement record exclusions. A FOIA request can be made for any agency record. **(justice.gov, 1980)** Note: The FOIA website **(foia.gov, 2014)** strays away from the term "official record" and instead, focuses on the information being requested as "material."

Aside from the duplicate, library, and museum documents mentioned above, in the government context, working notes and personal papers are not considered official records. These include "*rough notes, calculations, or drafts assembled or created and used to prepare or analyze other documents*" and "*documentary materials of a private or nonpublic character…*" (NARA Web Site, 2014).

As the FOIA website currently alludes, material is another way to refer to information in any form or any "evidence of transaction" **(foia.gov, 2014)**. Still, other RM sources said instead of arguing about the definitions, a unit should ask themselves what information they possess that is most important to the organization.

RM: Generally Accepted Recordkeeping Principles

One of the most legitimate sources to identify the most accepted principles of records management is the Association of Records Managers and Administrators (ARMA) International, a not-for-profit professional association and the authority on information governance (ARMA International, 2014). Established in 1955, ARMA International is the oldest and largest association for the information management profession. It provides education, publications, and information on the efficient maintenance, retrieval, and preservation of vital information created in public and private organizations in all sectors of the economy. It is also the publisher for Information Management magazine and the Generally Accepted Recordkeeping Principles. The elements of GARP are summarized below (ARMA International, 2014):

1. Principle of Accountability: An organization shall assign a senior executive to oversee the information governance program, delegate program responsibility to appropriate individuals, adopt policies and processes to guide staff, and ensure program auditability.
2. Principle of Integrity: An information program shall be constructed so the records and information generated or managed by or for the organization have a reasonable and suitable guarantee of authenticity and reliability.

3. Principle of Protection: An information governance program shall be constructed to ensure a reasonable level of protection to information that is personal or that otherwise requires protection.
4. Principle of Compliance: An information governance program shall be constructed to comply with applicable laws and other binding authorities, as well as the organization's policies.
5. Principle of Availability: An organization shall maintain its information in a manner that ensures timely, efficient, and accurate retrieval of its information.
6. Principle of Retention: An organization shall retain its information for an appropriate time, taking into account all operational, legal, regulatory, and fiscal requirements, and those of all relevant binding authorities.
7. Principle of Disposition: An organization shall provide secure and appropriate disposition of information in accordance with its policies, and applicable laws, regulations, and other binding authorities.
8. Principle of Transparency: An organization shall document its policies, processes, and activities, including its information governance program, in a manner that is available to an understood by staff and appropriate interested parties.

Records Management: A Government Context

The National Archives and Records Administration (NARA) is America's record keeper. Established in 1934, it is the U.S. government agency responsible for appraising, accessioning, preserving, and making available permanent records that have sufficient

historical or other value to warrant their continued preservation by the federal government (ARMA International, "Glossary of Records and Information Management Terms", 2005). According to NARA, of all the “documents and materials” created in the course of business conducted by the Federal government, only 1%-3% are so important for legal or historical reasons, they are kept by this agency forever (NARA Web Site, 2014).

The 28 November 2011 Presidential Memorandum, “Managing Government Records,” marked the beginning of an Executive Branch-wide effort to reform records management policies and practices to develop a 21st century framework with the intent to include: “*improved performance and promotion of openness and accountability by better documenting agency actions and decisions; further identification and transfer to National Archives and Records Administration (NARA) of the permanently valuable historical records through which future generations will understand and learn from our actions and decisions, and assistance to executive departments and agencies in minimizing costs and operating more efficiently*” (The White House, Office of the Press Secretary, 2011).

The National Archivist of the United States followed suit by writing: “*Records are the foundation of open government, supporting the principles of transparency, participation, and collaboration. Well-managed records can be used to assess the impact of programs, to improve business processes, and to share knowledge across the Government. Records protect the rights and interests of people, and hold officials accountable for their actions. Permanent records document our nation's history.*”

This directive provides a Records Management framework intended to comply with federal statutes and regulations to achieve the benefits outlined in the Presidential Memorandum.

Records Management: DoD Context

As both memorandums mention, today's American government operates with the expectation of heightened transparency, accountability, and accuracy in reporting. While this American philosophy—that the public has the right to be informed—seems legitimate, the Department of Defense is in the national security business and is oftentimes exempt from sharing minute details of every decision and policy based on operations tempos.

Many NARA and Government Accounting Office (GAO) reports state that Records Management is deemed an afterthought in today's government workplace, including the DoD and its components. Despite the fact that even NARA has not fared well on inspections, based upon their inability to manage their own information, should the DoD be concerned with regards to RM? What kinds of problems are evident from the get-go? Why does RM receive a bad reputation when it seems relatively straight forward and a necessity to our nation's preservation and history?

DoD 5015.2 and DoD 5015.2STD are two major publications that present specific functional requirements for incorporating technology and software into the military's RM programs. DoD 5015.2 establishes responsibility for the DoD Records Management Program, states policy and responsibilities for life-cycle management (creation, maintenance and use, and disposition) of information as records in all media, and

authorizes the publication of implementing and procedural guidance on the management of records in the Department of Defense (Department of the Air Force, 25 April 2007) 6 March 2006). Meanwhile the DoD 5015.2 STD states it "*provides implementing and procedural guidance on the management of records in the Department of Defense. It sets forth mandatory baseline functional requirements for Records Management Application (RMA) software used by the DoD Components in implementing their records management programs; defines required system interfaces and search criteria that RMAs shall support; and describes the minimum records management requirements that must be met based on current National Archives and Records Administration (NARA) regulations*" (Department of the Air Force, 25 April 2007).

Records Management: Air Force Context

The Air Force Records Office is located at Headquarters Air Force, Pentagon, Washington, D.C. and is a division of SAF/CIO A6. At the time of this writing, specific policies, such as Air Force Instruction (AFI) 33-322 entitled Air Force Records Management are being revised and reevaluated. A great majority of this regulation, currently, is intended for one Communications Squadron (CS) as part of a pilot study(Air Force Instruction (AFI) 33-322, Records Management Program (for 744 CS), 2013). Only a small portion of the regulation is intended for the rest of the AF(Air Force Instruction (AFI) 33-322, Records Management Program, 2013). In addition to new ideas/policies, a change is also occurring within a career field known as the Knowledge Management Community, formerly known as the Information Management (IM) or Knowledge Operations Management (KOM) community. These are the personnel most responsible for RM in the Air Force. Several changes are currently being made to this

career field in terms of how these administrators will be structured within the unit big divide between the communications world.

As written in AFI 33-322, 4 June 2012, para 3.1.1, "*The overall goal of the Air Force Records Management Program is to adequately and properly document the policies, transactions, and management of U.S. Air Force operations; therefore, the organizational objectives of records maintenance is to achieve the following:*

3.1.1.1. Document Core Functions. Organizations must identify and manage those records which account for every aspect of accomplishing their mission, to include operations, training, logistics, facilities, financial transactions, personnel transactions, and so forth. Each of these contributes to the organization achieving its mission; therefore, records containing organizational policies and transactions must be included in the records maintenance program.

3.1.1.2. Ensure Proper and Timely Disposition of Records. Users at all levels are responsible to understand records they create and handle as part of their daily responsibilities, and must ensure these records are disposed of accordingly to this instruction and the Air Force RDS. Air Force members will not, under any circumstances, destroy records prior to those records scheduled disposition.

3.1.1.3. Ensure Availability and Protection of Records. Records must be made available to those who require access to accomplish their mission. Simultaneously, records must be protected against unauthorized disclosure to those who should not have access, including individuals and organizations, both

within and outside the Air Force, who do not have sufficient clearance or need to know."

Para 3.1.2 states that each organization will maintain a record plan that focuses on official records for which their organization creates or is the office of primary responsibility (OPR). One interesting facet about Records Management is para 2.2 is that the "overall Air Force Responsibility" for the AF Records Management Program belongs to The Air Force Chief Information Officer (SAF/A6 CIO), but "*effective management of records for an organization, the scope and size of the Air Force, requires an [extensive] network of records professionals. The network of roles includes: the AFRO, Command and Agency Records Managers (CRM/ARM), Base Records Managers (BRM), Unit Commanders/Directors, and Unit Record Managers (URM)*" (Air Force Instruction (AFI) 33-322, Records Management Program (for 744 CS), 2013). The regulation, in Para 7, also alludes to the idea that Information Technology (IT) Portfolio Managers of IT investments should provide the funding for each program at the unit level (Air Force Instruction (AFI) 33-322, Records Management Program, 2013). It appears as though a great responsibility generally falls under each unit's Computer, Communication, or Information Technology Unit (Communications Squadron or Directorate). In Air Force environments, the Knowledge Management personnel conduct RM responsibilities under the realm of communications directorate, but in large units, they oftentimes work for separate directorates units pertaining to their day-to-day responsibilities. Some of the forthcoming changes will alter this structure and establish hubs within a unit dedicated to RM, but it is very unlikely this idea will work unless there is enough work available for them to do so. Funding of RM specific activities is a major issue. While the manpower

funding generally is not an item of concern, the cost for implementing the RM program and its mandates generally comes from the budget of the Chief Technology Officer or Chief Information Officer of the communications directorate.

Measuring Compliance in Air Force Environments

Major Command (MAJCOM)-level Inspector Generals' evaluate compliance for unit-level RM programs. They are responsible for validating RM programs are run in accordance with the policies and directives discussed above and the assumption is that they are able to do so given their familiarity with the nature of the unit's work. Inspection checklists are somewhat generalized and focus more on questions such as, "Has a Records Manager been appointed in writing?" It also includes questions pertaining to what training has been conducted, what guidance has been received, and is there compliance with the corresponding records and disposition schedules. Generally, the inspection checklists vary based upon that particular MAJCOM's interpretation. Interestingly, headquarters Inspector General (IG) is not generally involved in the oversight of this program (SME#7, 2013)

Why Do People Do Records Management?

Several corporate and government agencies, such as Storr Records Management, The Environmental Protection Agency (EPA) and the Department of Interior (DOI) have adopted thorough, yet flexible RM programs which stem from literature written by Robek, Brown, called Ten Business Reasons for Records Management in Information and Records Management: Document-based Information Systems (Robek, Brown, & Stephens, 1995; What Every EPA Staffer Should Know About Records Management,

2013; Department of Interior, 2010). Each of these websites contains a summarization of RM objectives which falls into at least one of three categories:

- Service (effective and efficient)
- Profit (or cost-avoidance), and
- Social (moral, ethical, and legal) responsibility

The authors note that RM programs must manage organizational information so that it is timely, accurate, complete, cost-effective, accessible, and useable. However, for most organizations, their sole mission is not to maintain and run RM programs. Incentives, or business reasons, for establishing a strong, value-added RM program are listed in Table below (Robek, Brown, & Stephens, 1995; What Every EPA Staffer Should Know About Records Management, 2013; Department of Interior, 2010):

Table 5. Ten Business Reasons for Records Management

	Business Reason	Explanation
1.	**To Control the Creation & Growth of Records**	Effective RM programs address both creation control and records retention. Creation control limits the generation of records or copies not required to operate the business and records retention is creating systems for destroying useless records or retiring inactive records, thus stabilizing the growth of records in all formats.
2.	**To Reduce Operating Costs**	Recordkeeping requires administrative dollars for filing equipment, space in offices, and staffing to maintain an organized filing system (or to search for lost records when there is no organized system).
3.	**To Improve Efficiency and Productivity**	Time spent searching for a missing or misfiled record is non-productive. A good records management program can help any organization upgrade its recordkeeping systems so that information retrieval is enhanced, with corresponding improvements in office efficiency and productivity. A well designed and operated filing system with an effective index can facilitate retrieval and deliver information to users as quickly as they need it.
4.	**To Assimilate New Records Management Technologies**	A good records management program provides an organization with the capability to assimilate new technologies and take advantage of their many benefits. Investments in new computer systems don't solve filing problems unless current manual recordkeeping systems are analyzed (and occasionally, overhauled) before automation is applied.
5.	**To Ensure Regulatory Compliance**	In terms of recordkeeping requirements, the United States is the most heavily regulated country in the world. These laws can create major compliance problems for businesses and government agencies since they can be difficult to locate, interpret and apply. The only way an organization can be reasonably sure that it is in full compliance with laws

		and regulations is by operating a good records management program which takes responsibility for regulatory compliance, while working closely with the Office of General Counsel. Failure to comply with laws and regulations could result in severe fines, penalties or other legal consequences.
6.	**To Minimize Litigation Risks**	Business organizations implement records management programs in order to reduce the risks associated with litigation and potential penalties. This can be equally true in Government agencies. A consistently applied records management program can reduce the liabilities associated with document disposal by providing for their systematic, routine disposal in the normal course of business.
7.	**To Safeguard Vital Information**	Every organization, public or private, needs a comprehensive program for protecting its vital records and information from catastrophe or disaster, because every organization is vulnerable to loss. Operated as part of the overall records management program, vital records programs preserve the integrity and confidentiality of the most important records and safeguard the vital information assets according to a "Plan" to protect the records.
8.	**To Support Better Management Decision Making**	In today's business environment, the manager that has the relevant data first often wins, either by making the decision ahead of the competition, or by making a better, more informed decision. A records management program can help ensure that managers and executives have the information they need when they need it. By implementing an enterprise-wide file organization, including indexing and retrieval capability, managers can obtain and assemble pertinent information quickly for current decisions and future business planning purposes.
9.	**To Preserve the Corporate Memory**	An organization's files contain its institutional memory, an irreplaceable asset that is often overlooked. Every business day, you create the records which could become background data for future management decisions and planning. These records document the activities of the Agency which future scholars may use [for] research.
10.	**To Foster Professionalism in Running the Business**	A business office with files askew, stacked on top of file cabinets and in boxes everywhere, creates a poor working environment. The perceptions of customers and the public, and "image" and "morale" of the staff, though hard to quantify in cost-benefit terms, may be among the best reasons to establish a good records management program.

Chapter Summary

In this chapter, we presented a brief summary of the seminal RM documents to provide understanding of the need for, the philosophy of, and premise of RM activities. Relevant United States government, Department of Defense (DoD), and USAF policy, instructions, regulations, and guidelines were reviewed. A review of how compliance with RM policy and instructions within USAF environments is presented with the

objective of revealing how RM activities are measured. Finally, a discussion of what factors motivate RM activities in organizations was presented to identify the potential benefits provided by a properly operating RM program.

III. Methodology

Chapter Overview

This chapter discusses the development of the research methodology used to answer the research questions posed in Chapter 1. Specifically, the selection of the case study methodology, the value of using an exploratory case study research methodology, and the components of the hybrid research methodology used to complete the research are presented. Bryant developed a style for presentation of the research methodology that will be used in this work (Bryant, 2007).

Research Strategy

Yin, suggests that researchers select research strategies based off three situational factors "(a) the type of research question posed [the "who", "what", "where", "how", and "why" questions], (b) the extent of control an investigator has over actual behavioral events, and (c) the degree of focus on contemporary as opposed to historical events" (Yin, Case Study Research Design and Methods, 2003).

The focus of this research is to examine and understand how RM is implemented in United States Air Force (USAF) environments in order to determine if the underlying principles and objectives of RM are actually being achieved. Further, it seeks to determine if the objectives of the USAF RM program are realistic given the current guidance, organizational culture, and resources dedicated to the RM activity. As such, the form of research questions can be primarily categorized as "how" and "why" questions used to determine the implementation of RM in USAF environments. Yin identifies that "*How and why questions are more explanatory and likely to lead to the use of case studies, histories, and experiments as the preferred research strategies*".

Since the researcher is not responsible for the implementation, guidance, or management of RM in USAF environments, it is not possible to control the behavior of an organization so that an experiment can be performed. Further, in large governmental organizations this is often not possible due to the permissions that would be required to deviate from existing guidance and the legal and regulatory requirements.

Finally, the third factor used to select a research strategy is the degree of focus on contemporary as opposed to historical events. Although it is important to understand the history and reasons why decisions were made, this research is focused on understanding how RM is currently being conducted so that informed commentary on the state of affairs of RM can be made as well as recommendations for future improvement.

Figure 1 below, adapted from Yin, depicts the basic research strategies that one can select from based upon situational factors identified in the research (Yin, Case Study Research Design and Methods, 2003). In this figure, the green filled dots represent the characteristics of the research as discussed above.

Strategy	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary Events?
Experiment	how, why? ●	Yes ○	Yes ●
Survey	who, what, where, how many, how much? ○	No ●	Yes ●
Archival Analysis	who, what, where, how many, how much? ○	No ●	Yes/No ●
History	how, why? ●	No ●	No ○
Case Study	how, why? ●	No ●	Yes ●

Figure 1. Relevant Situations for Different Research Strategies **(Yin, Case Study Research Design and Methods, 2003)**

Based upon Yin research strategy taxonomy, the goals and objectives of the research, and the need for a structured research methodology, the case study research methodology was selected as the best tool to obtain answers to the research questions.

Case Study Research

The case study is one of many strategy tools for the researcher and has three basic purposes: explanation, description, and exploration. Datta states that "*Doing a good case study is more than just looking at what is happening in a few instances. It is a special systematic way of looking at what is happening, of selecting the instances, collecting the data, analyzing the information, and reporting the results*" (Datta, L., 1990). A case study is useful for learning about complex circumstances and is the preferred strategy "*when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context*" (Yin, Case Study Research Design and Methods, 2003). As identified in Chapter 1, there appears to be substantial differences between the goals of RM and the implementation within USAF environments which needs to be better understood. The application of a case study method to study the issues will contribute to the body of knowledge on the technical and cultural aspects of RM.

There are three predominant types of case study research: explanatory, descriptive and exploratory case studies (Yin, Case Study Research Design and Methods, 2003). The explanatory case study is used to explain a course of event. The descriptive case study aims at presenting a complete description or overview of a phenomenon within a certain

context. The exploratory case study must both be able to explain and describe the phenomena under study in order to have an in-depth understanding of the different aspects involved. In this research, an exploratory case study methodology will be used. . An overview of the approach to this case study research, adapted from Bryant (2007), can be found in Appendix A.

Why an Exploratory Case Study?

The exploratory case study methodology is most useful for understanding situations that have not yet been investigated in detail. It is used where uncertainty exists and is designed to assist in the development of future evaluation questions, metrics, and strategies. An exploratory case study can help identify opportunities for process improvement which can yield reductions in costs and improved efficiency in organization operations. Datta identified that an exploratory case study helps to narrow the scope of future research so that it yields greater understanding and logical place to start (Datta, L., 1990). Yin stated that case studies are the perfect tool "*…aimed at defining the questions and hypotheses of a subsequent study or determining the feasibility of the desired research procedures*" (Yin, Applications of Case Study Research, 2003). Although the case study methodology has significant advantages when compared to other research methods, there are some inherent limitations that must be considered when employing this method. These limitations will be explicitly addressed and discussed in a section at the end of chapter.

Case Study Design

This research employs a case study design with multiple units for analysis. This type of research design was selected for several reasons. First, a case study it is unique in its ability to be representative of the "how" RM is conducted in USAF environments and "*to capture the circumstances and conditions of an everyday or common situation*" (Yin, Case Study Research Design and Methods, 2003). Second, there has been little research conducted to determine if the goals and objectives of RM are actually being achieved. Notional evidence presented in Chapter 1 indicates that RM tends to be a compliance based activity with little focus on its true intent. A case study will help determine if this assessment is true and can be useful in understanding the factors and circumstances which precipitate this outcome. Finally, a case study will help benchmark identifying issues and current processes that may aid in future longitudinal studies that can be useful to future researchers who seek to compare two points in time (Yin, Case Study Research Design and Methods, 2003).

While the main unit of this case study is the USAF community as a whole, this research only examines two representative organizations that will be studied in detail to understand the philosophy, guidance, implementation, and evaluation of RM activities within USAF environments. While this may be a significant limitation, the researcher had to scope the problem so that it could be addressed in the time allotted. Throughout the research, as the key RM elements are identified and documented, additional data collection techniques may be used to expand understanding and aid in the analysis of the collected data.

The framework to support this single-case method consists of three primary steps: 1) Define and Design, 2) Prepare, Collect, and Analyze and 3) Analyze and Conclude. We now examine each of these activities in greater detail and discuss the requirements, suitability, and selection of the case design.

Step 1: Define and Design

The first step of the research sets the foundation and direction for the whole case study. Figure 2 shows the three sub-stages that are critically important to understand before conducting the research: 1) develop research questions, 2) select context and case, and 3) define what are to be the units of analysis and design protocol for data collection.

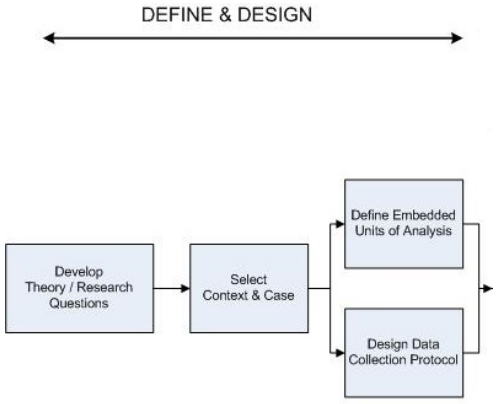


Figure 2. Single-Case Study Method – Phase 1 **(Yin, Case Study Research Design and Methods, 2003)**

<u>Developing the Research Questions</u>

During the first stage, a specific definition of the problem is formalized which helps to establish boundaries and reign in what type of case selection would be the most helpful in answering the research questions. In this research effort, the research questions focus upon understanding how RM is conducted in USAF environments.

Context and Case Selection

Defining the research questions focuses the investigation and helps to narrow the potential contexts and cases which can be used to conduct the research. In this research, we need to understand the culture, philosophy, guidance, implementation, evaluation, and effectiveness of RM in USAF environments. Figure 3 and Figure 4 shows a graphical representation of two different contexts by which the overall case study design used in this research was accomplished. Context A, shown in Figure 3 demonstrate different ideologies associated with RM programs. Context B, shown in Figure 4, addresses the governance and way in which RM programs are designed and implemented.

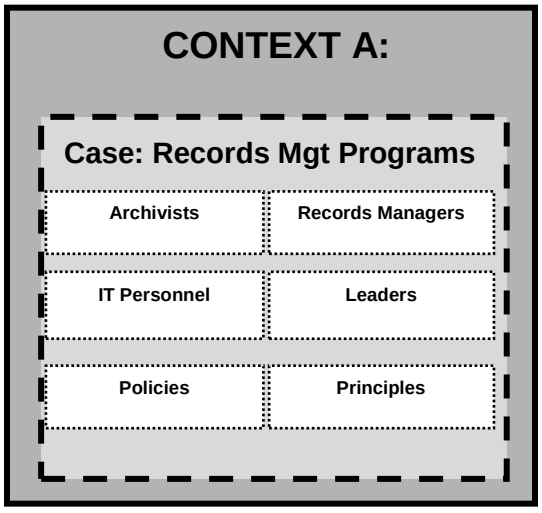


Figure 3. Case Study Design, Context A: Ideologies

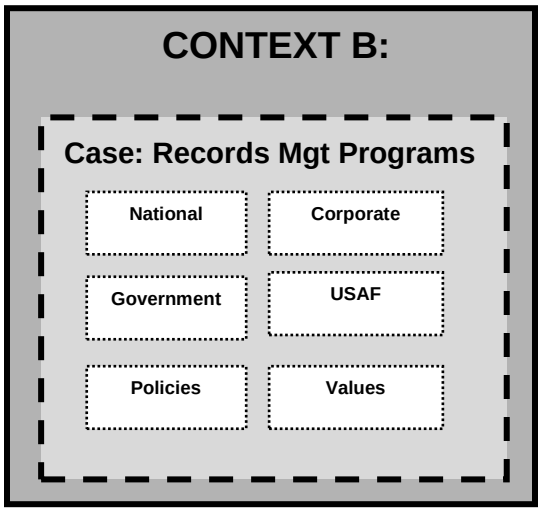


Figure 4. Case Study Design, Context B: Governance

Defining the Units of Analysis

Defining the units of analysis and designing the data collection protocol is a critical step when conducting case study research. There are many different possible contexts and cases in which RM can be observed and researched. For example, an air intercept unit may have different operational objectives when compared to an aircraft maintenance squadron with respect to RM. The focus of the research questions help to dictate the appropriate unit of analysis. In this research, two separate organizations were chosen to study: an intelligence organization and an educational organization. The intelligence organization was chosen due to the large amount of information managed in this environment. The educational organization was chosen due to the diversity of the stakeholders and the availability of data for analysis. The selection of two organizations with widely different missions was intentional to obtain a wider variance in data.

Data Collection Protocol

The data collection protocol is required to add rigor to the overall research activity. It helps select the most useful tools and evidence to develop answers to the complex research questions. Yin discusses three principles case study researchers should follow to help deal with problems of validity and reliability: "(a) using multiple, not just single sources of evidence; (b) creating a case study database; and (c) maintaining a chain of evidence" are particularly important to the collection of data in case study research (Yin, Case Study Research Design and Methods, 2003). Each of these principles is now examined and their importance in light of the development of this research's investigative protocol is discussed.

Using Multiple Sources of Evidence

The data collection protocol used to conduct this case study research was created using Yin's principles. In order to answer the research question, multiple sources of evidence had to be collected and correlated. Yin cited six primary sources of evidence as shown in Table 6 (Yin, Case Study Research Design and Methods, 2003). This provides insight into both the strengths and weaknesses to consider when building support for the case study database.

Table 6. Six Sources of Evidence: Strengths and Weaknesses (Yin, Case Study Research Design and Methods, 2003)

Source of Evidence	Strengths	Weaknesses
Documentation & Archival Records	• Stable – can be reviewed repeatedly • Unobtrusive – not created as a result of the case study • Exact – contains exact names, references, and details of an event • Broad coverage – long span of time, many	• Retrievability – can be low • Biased selectivity, if collection is incomplete • Reporting bias – reflects (unknown) bias of author • Access – may be deliberately

	events, and many settings • Precise and quantitative	blocked • Accessibility due to privacy reasons
Interviews	• Targeted – focuses directly on case study topic • Insightful – provides perceived causal inferences	• Bias due to poorly constructed questions • Response bias • Inaccuracies due to poor recall • Reflexivity – interviewee gives what interviewer wants to hear
Direct Observations	• Reality – covers events in real time • Contextual – covers context of events	• Time-consuming • Selectivity – unless broad coverage • Reflexivity – event may proceed differently because it is being observed • Cost – hours needed by human observers
Participant Observation	• Reality – covers events in real time • Contextual – covers context of events • Insightful into interpersonal behavior and motives	• Time-consuming • Selectivity – unless broad coverage • Reflexivity – event may proceed differently because it is being observed • Cost – hours needed by human observers • Bias due to investigator's manipulation of events
Physical Artifacts	• Insightful into cultural features • Insightful into technical operations	• Selectivity • Availability

Creating the Case Study Database

Each of the sources of evidence are collected and evaluated in light of the research questions to become the supporting structures in the construction of the case database. In this section, we examine how the case study database will be populated with the sources of evidence shown in Figure 5.

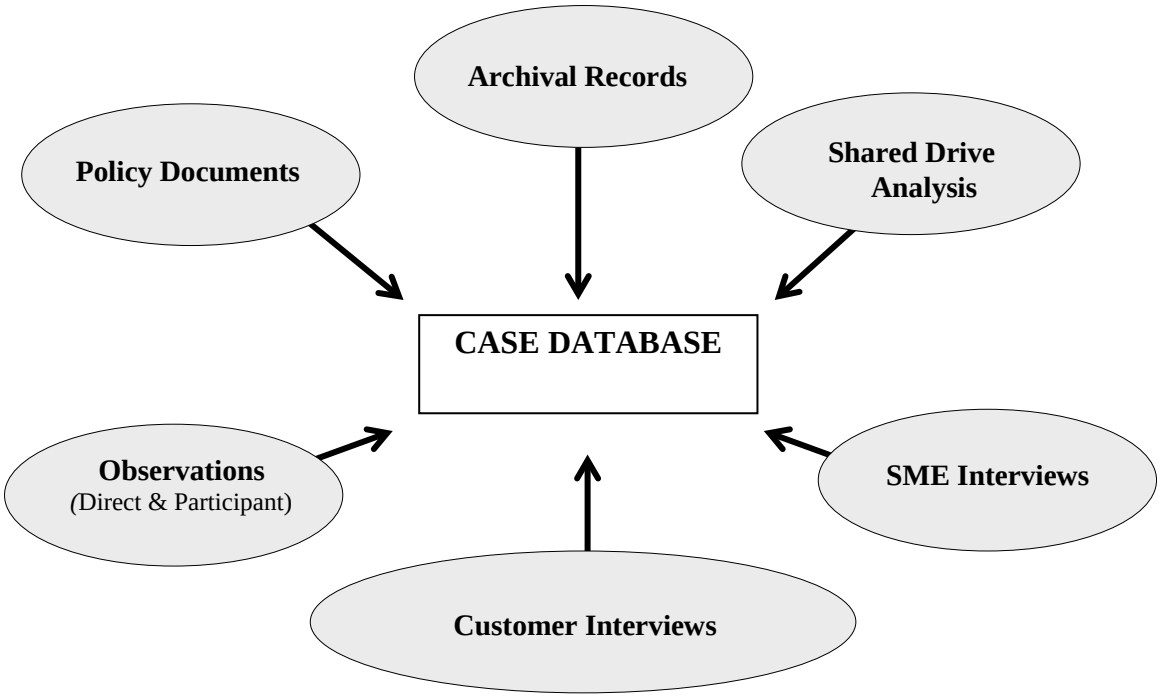


Figure 5. Building the Case Study Database

Subject Matter Expert (SME) Interviews

The case study interviews were selected with careful consideration for the level of expertise, experience, and recognition of individuals identified as Subject Matter Experts (SMEs) in the RM discipline. The SME interviews were conducted in person between the January 2013 and December 2013. As required by the human subjects review board exemption requirements, no identifying information obtained from through interviews will be recorded, retained or reported in this research. This is required in order to protect the individual's financial standing, employability, or reputation. The formal interview protocol can be found in Appendix B.

The SME interview questions were developed and organized by the following common RM categories identified during the literature review as shown in Table 7. The interview questions can be found in Appendix C.

Table 7. Common Records Management Focus Categories

RM Category	Description	Example
Administrative	Policies and procedures designed to enforce RM mandates	- Planning - Usage, monitoring, and accounting - Security awareness training - Data Sensitivity Matrices - Risk Assessment - System and Services Acquisition - Certification, Accreditation, and Security Assessments - Inspections
Logical / Technical	Object access restrictions implemented through the use of software or hardware	- User identification and authentication - Encryption - Segregated network architecture - Personnel Security - Physical and Environmental Protection - Contingency Planning - Configuration Management - Maintenance - System and Information Integrity - Media Protection - Incident Response - Awareness and Training
Physical	Physical requirements for paper-based records and artifacts	- Identification and Authentication - Access Control - Fences - Walls - Locked doors - Audit and Accountability - System and Communications Protection

Policy Documents

Policy documents, guidance, and instructions are physical evidence and can be used to help corroborate and correlate information from other sources and triangulate in on situational facts (Yin, Applications of Case Study Research, 2003). All of these source documents play a key role in understanding how RM activities within the USAF

are conducted. A detailed examination of these documents may provide insight into patterns or causes of practices that help or hinder the overall intent of RM. Ultimately, how the organization chooses to construct, interpret, and implement RM will lead to certain actions and responses from the affected parties. The strength, weaknesses, or lack of policy, guidance, and instructions together will influence the effectiveness of RM within an organization. Refer to Chapter 2 for a summary of the relevant RM policies, guidance, and instructions identified in this research.

Archival Records

Very similar to the documentation of policy documents, archival records are often seen in the form of service records, organizational records, maps and charts, lists, survey data, and personal records(Yin, Case Study Research Design and Methods, 2003). Any archival records found will be used to help support and lend further credibility to the chain of evidence.

Customer Interviews

As we study the processes of how records management is implemented in the USAF environment, it is important to recognize the customer, whom RM is designed to serve and receives the final benefit. Hammer and Champy describe processes as "...a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer"(Hammer & Champy, 2003). Part of the primary goal of this research is to "maximize USAF *mission* processes and minimize *customer* inefficiencies", so it becomes very important to understand our customer's perspective as we form policy, guidance, and instructions. This research will consider the key customers who should benefit from RM.

Observations

Observations are insight gained by being aware of the things that are happening around oneself. Yin identified that "Such observations serve as yet another source of evidence in a case study" (Yin, Case Study Research Design and Methods, 2003). Observations of how records management works, or fails to work, can be invaluable at understanding the technologies being used and the problems or limitations that might be encountered (Yin, 2003:93).

Shared Drive Analyses

Understanding how organizations manage data on shared storage locations within an operational organization can provide invaluable insight into the effectiveness of RM policy, guidance, and instructions. Analysis of usage data collected from the data stores may help in understanding who the primary customers are including where, when, and what they store and what is deemed as a "record." Although this information may be helpful, there are difficulties in collecting such information. The ability to collect this data over a long period of time is limited by the costs and ability of the computer support organization to provide the requested data.

Maintaining a Chain of Evidence

In order to ensure that the case database maintains its reliability, everything that goes into the case database must be from reliable source of evidence. A "chain of evidence" helps to link the case study questions to the final case study report through the protocol, citations to sources, and the integrity of the case study database. What is required is that the research has "been able to move from one part of the case study process to another, with clear cross-referencing to methodological procedures and the

resulting evidence" (Yin, Case Study Research Design and Methods, 2003). Traceability adds rigor to the research and strengthens the conclusions drawn from the research.

Step 2: Prepare, Collect, and Analyze

The second stage of this research builds upon the foundations set in the first stage by preparing, collecting, and analyzing that which was laid out in the definition and design of the protocol. This research phase consists of two basic actions: conducting the research and writing up the embedded analysis. These actions are repeated for each identified embedded unit of analysis, as identified below in Figure 6.

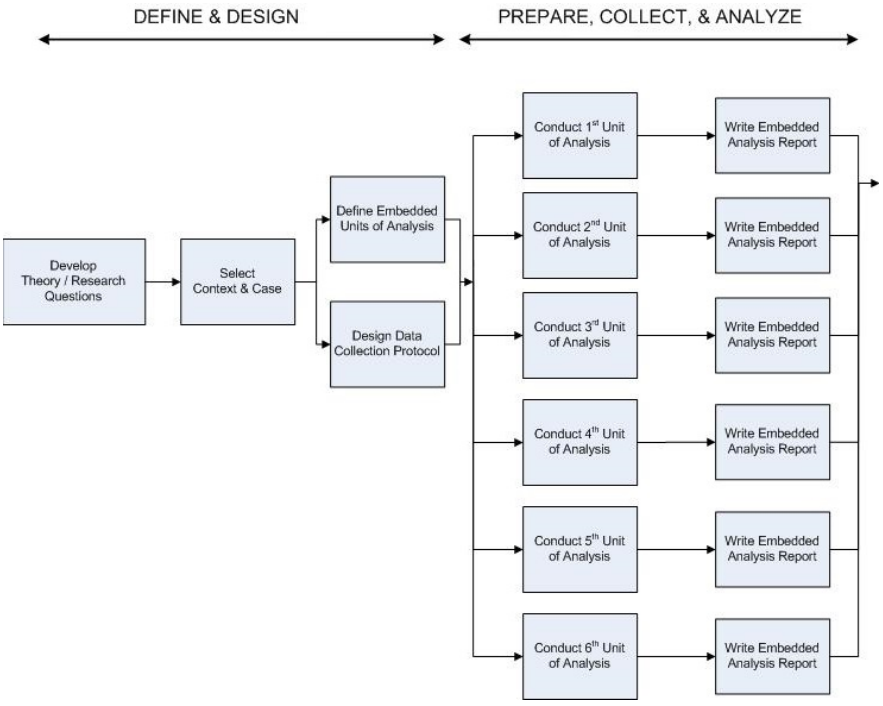


Figure 6. Single-Case Study Method – Phase 2 **(Yin, Case Study Research Design and Methods, 2003)**

Conducting Units of Analysis

Each unit of analysis was conducted using the defined data collection protocol. All sources of evidence that could be identified were collected for subsequent study. The research questions, the nature of the organization, and personal interviews with SMEs provided the basis for selection of units of analysis used in this research. This type of investigation leans heavily on the understanding of the following five basic investigative skills: 1) question asking, 2) listening, 3) being adaptive and flexible, 4) grasp of the issues being studied, and 5) lack of bias (Yin, Case Study Research Design and Methods, 2003).

This case study has been developed to include six embedded units of analysis within the case of the records management within USAF environments. They are:

1) Records Management Principles
2) National Level RM Policies, Guidance, and Instructions
3) Defense Department Level RM Policies, Guidance, and Instructions
4) Air Force Level RM Policies, Guidance, and Instructions
5) Interviews with RM & IT Personnel
6) Interviews with RM Consumers

Methods of Analysis

Once the collection of the individual units of analysis is completed, a cross-functional analysis will be conducted. This research will employ three techniques, as recommended by the GAO Case Study Guidance, to interpret the collected data. The first

technique involves pooling together all the different sources of evidence, across the entire case database, from SME interviews, observations, documents, and policies for an extensive analysis (Datta, L., 1990). The second technique will be to analyze the data through triangulation as Yin describes as a "convergence of evidence" (Yin, Case Study Research Design and Methods, 2003). By identifying matching patterns or themes may be useful in building explanations. The third technique employed will be the comparison of evidence for consistency.

Writing the Embedded Analysis Report

Conducting each unit of analysis would draw upon the data collection protocol, which the written report will be in the traditional question-answer narrative format. With as many research questions posed from the beginning, it seems logical to follow through with the same organization style. Yin notes advantages of this style as "*…a reader need only examine the answers to the same question or questions within each case study to begin making cross-case comparisons. Because each reader may be interested in different questions, the entire format facilitates the development of a cross-case analysis tailored to the specific interests of its readers*" (Yin, Case Study Research Design and Methods, 2003). Yin also states that "*A series of questions can be posed, with the answers taking some reasonable length…and can contain all the relevant evidence and can be augmented with tabular presentations and citations*" (Yin, Case Study Research Design and Methods, 2003).

Step 3: Analyze and Conclude

The third stage of this research methodology consists of taking into account everything that we set out to learn in the first stage in conjunction with what was

discovered in the second stage and process and synthesize the ideas and knowledge into something new as shown in Figure 7.

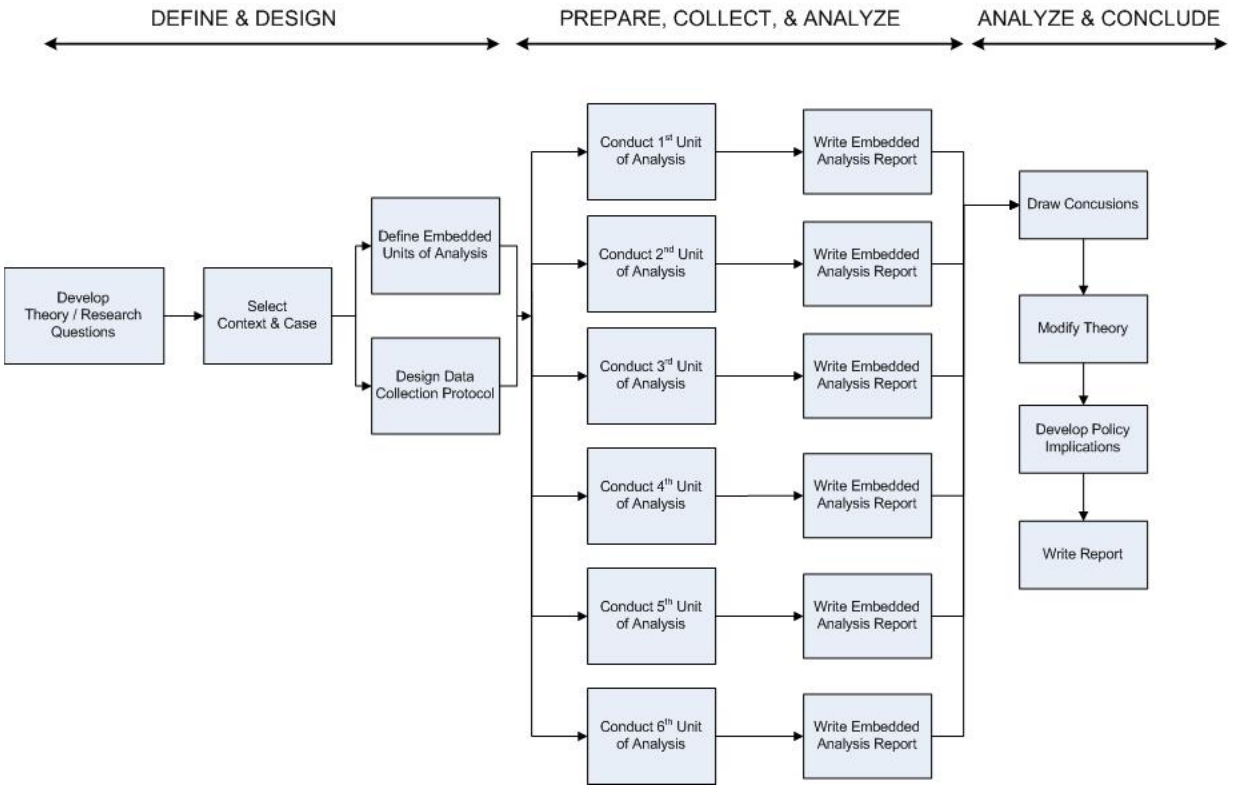


Figure 7. Single-Case Study Method – Phase 3 **(Yin, Case Study Research Design and Methods, 2003)**

In this way, the research questions may be answered and insights into the effectiveness of RM can be expressed. This often leads to the development of new questions and new theories. As conclusions are drawn and theories modified, new insight enables us to identify the strengths and weaknesses of RM within USAF environments so that recommendations can be made to improve its effectiveness and efficiency. This is why it is critically important to capture these conclusions, theories, and implications into

a written report so that it may be used to communicate this understanding to others with similar interests and questions. This third step will be conducted in Chapter 4, where the discussion will be directed at answering the primary research questions, drawing conclusions from the case database, and developing an idea of what kind of implications may be drawn from the findings.

There are five general characteristics of exemplary case studies and are measures of how this report will be gauged. These five characteristics are that the case study must 1) be significant, 2) be complete, 3) consider alternative perspectives, 4) display significant evidence, and 5) be composed in an engaging manner (Yin, Case Study Research Design and Methods, 2003).

Limitations of Case Study Research

In this section, the limitations of using a case study methodology are reviewed. It is important for the reader to understand these limitations so that the results drawn from the research are taken in context.

One limitation of this research is that the activity of records management is an enormous topic and encompasses multiple facets of information theory, information philosophy, information management, technology, software, and organizational culture. While every attempt was made to identify the relevant information needed to answer the research questions, it was not possible to exhaustively address all of these related issues.

Another limitation of this research is that it focuses upon two organizations as being representative of the USAF environment as a whole. Due to time and resource constraints, this approach was required to meet the research schedule deadlines.

Another potential limitation of this research is that it is being conducted by the author, who has certain personal experiences with RM in operational settings. This may result in a narrow focus that is not all encompassing and bring unconscious bias to the interpretation of the research findings. The selection of a representative organization to study in this research presents a potential limitation. All organizations differ in the operations, management, culture, and interpretation of policy, guidance, and instructions. As consequence, the findings of this research may not be applicable to all organizations.

Another limitation of this research is that sometimes the case study evidence collection does not meet the objectives of the research plan. It is important to investigate all possible concerns prior to committing to a particular case to avoid misrepresentation (Yin, Case Study Research Design and Methods, 2003). Table 8 summarizes the potential limitations and pitfalls when using case study research (Yin, Applications of Case Study Research, 2003).

Table 8. Potential Pitfalls of Case Study Research

Pitfalls	Limitations, Strengths and/or Weaknesses
Researcher	• Adequate exploration / investigation • Over-involvement • Personal bias • Researcher assumptions • Competency • Expertise (Grasp of the issues being studied) • Ability to adapt to situations • Flexible • Influences • Judgment & Intuition

	• Investigative Skills
	  o Interview/question asking
	  o Listening
	  o Note taking
	  o Data collecting

Subject Matter Perspective	• Subject complexities • Context (What's happening around the subject) • Richness and detail • Technical skill requirements • Breadth and depth • Experience • Understanding of subject • Knowledge of patterns and causes
Data	• Reliability • Commitment (length & time) • Captures context • Interpretation • Lack of variety of data types • Number of variable and data points • Qualitative • Objectivity • Verifiability • Comparability • Quality control • Impartiality • Relationship between data collected and research question • Publication basis may severely limit generalization • Inadequate or uncertain quality of original data • Inadequate methods of relating findings • Quality of data-reduction procedures may be very difficult to determine the effects of changes in many contextual factors over time may be difficult to separate from effects of the programs • Insufficient attention to management and data reduction • Inefficiency, lateness, incomplete use of data

Summary of Methodology

This chapter discussed the approach taken in the development of the research methodology, designed to provide the most appropriate way to answer the research questions stated in Chapter 1. The case study research methodology was selected after evaluating competing research methodologies. The exploratory case study method was determined to be the best way to understand how records management activities within

USAF environments are implemented and conducted. This chapter also has discussed the three steps of the case study design and walked through how this research effort has been defined and designed, data preparation, collection and analysis, and sets the stage for the outcomes and conclusions that will be found in the remaining chapters of this thesis.

IV. Analysis and Results

Chapter Overview

In this chapter, the data contained in the case database as defined in Chapter 3 is presented in order to answer research questions posed in Chapter 1. The research findings are comprised of two exploratory case studies that involve multiple policy documents, archival records, observations, SME interviews, customer interviews, and analyses of shared drives. The analysis of the case database is presented using a question-answer narrative format. Each of the research questions is addressed and answered using all of the available sources of evidence from the developed case database.

RQ1: What is Records Management?

In order to understand Records Management (RM) and its underlying principles, it's best to first identify the historical context by which to view RM, in particular through the lens of traditional filing systems and how each era has managed the records around them. According to Andy Pattantyus, president of the Systems Engineering consulting firm called Strategic Modularity, "throughout the ages and despite all the advancements in technology over the past five millennia, three key [recordkeeping] issues continue to challenge [mankind] today: (1) the volume of information, (2) the ability to retrieve information after it's been stored; and (3) long-term protection against loss"(The History of Filing Systems, 2013). This source explains, "Every culture, in every era, has experienced the same difficulties with adequate, safe information storage and quick, easy information retrieval." This is true whether the analysis begins with ancient Sumerians recording Cuneiform weather data on clay tablets 5,000 years ago, to the Chinese using

ink to write on “books” formed by bamboo strips connected as scrolls 2,500 years ago, to the Greek scribes utilizing ink on papyrus and on parchment (i.e., animal hides) 2,300 years ago, these all presented unique challenges pertaining to indexing, storing, and conducting librarian sciences.

Fast-forwarding to more modern paper-based systems, in the 1600’s, the printing press emerged as a powerful tool to create duplicate copies. Information storage became more compact and cost-effective with paper and then, in the mid-1900s, typists were able to generate multiple copies using carbon paper. Filing systems morphed into a system comprised of paper documents stored in filing folders and filing cabinets. Index cards were stored in index card boxes, with separator tabs allowing for alphabetical or numerical tabs and “compact memory.” This is the way libraries implemented catalog systems for people to access and retrieve books and material. Throughout the history of recordkeeping, storing information has generally involved the practice of recording information on a physical medium, albeit clay tablets, papyrus, bamboo strips, parchment, many years later, paper, and then storing that media.

No matter the medium, the storage of records has associated risks and challenges. As Pattantyus explains, “Clay tablets can break. Water, rot, fungus, and fire can damage or destroy papyrus, bamboo, or paper…In the modern digital age, bits and bytes are just as easily lost or corrupted.” Although fire damage and water damage are deemed “obvious threats,” black ink on acid-free paper is surprisingly durable and still considered a high-quality archival medium today. Generally speaking, storage and retrieval mechanisms have always needed substantial staffing or those who are specially-trained to

manage the information storage and retrieval systems. Throughout much of history, the common person could not store or retrieve very much information.

Today's era is marked by the fact that large amounts of information can be created in a very short amount of time. According to IBM, every day we create more than 2.5 quintillion bytes of data (IBM, 2014). At this rate, 90% of the data in the world today has been created in just the last two years. The use of network based computers means information can be shared globally to many consumers, and end users can download media in many forms. When information processed on a daily basis is multiplied, it doesn't take long for the volume to become overwhelming. The practice of organizing information wanted or needed for future purposes becomes a critical necessity. The positive aspect is many people and organizations can store vast amounts of information, records, and data. Unfortunately, without a system in place for identifying and storing important information, it becomes difficult, oftentimes impossible, to retrieve the information. If the information is irretrievable, all the resources and effort placed into storing it becomes wasted. Despite inputting massive amounts of data into computers for efficient storage and retrieval, the history of the practice of filing systems continues to repeat itself, therefore, "designing effective solutions for reliable, safe and secure filing systems is just as challenging today as it was thousands of years ago" (The History of Filing Systems, 2013). It is no wonder information management, records management, and related fields are a multi-billion dollar industry as everyone is seeking "the" or even "a" solution! These historical examples are fascinating because the exact same challenges to RM in the past are present in corporate and government organizations today.

As discussed in Chapter 2, international standards provide globally vetted and accepted definitions for RM. In ISO 15489-1, Records Management is defined as the "*…field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including the processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records*" (Information and documentation -- Records management -- Part 1: General, ISO/CD 15489-1: 2001). On the surface, this appears to be a relatively straight forward activity with well-defined objectives. However, ARMA International identified that "Not every country nor organization nor individual shares the same perceptions or viewpoints in regards to the management of information and/or records" (ARMA International, 2014). This is indeed a critical issue, not only across organizational boundaries, but also within a single organization such as the USAF. To understand this dilemma, we should first recognize the difficulty at defining a "record". Of particular interest in this thesis is the U.S. Code 33, Section 3301 definition which is most often cited by DoD and USAF guidance: "*…records include all books, papers, maps, photographs, machine readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the United States Government under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government or because of the informational value of data in them*" (44 U.S.C. 3301, 2013). Unfortunately, this definition is so inclusive, general, and incredibly vague that it is virtually useless in

practice as it leaves too much interpretation when trying to implement and maintain an RM program. The result is inconsistency in the way that records are managed across organizations, or even within the same organization. The subjectivity of the definition of a record is one of the primary problems discovered in this research when conducting records management. Even the process of reconciling what is a record across organizational units can lead to arguments within leadership such that instead of expending energy to actually define it in their own context, they would prefer to only do the bare minimum needed to pass compliance inspections.

Let us consider the reasons why record keeping is valuable to organizational success over time. Recall from Chapter 2, the ARMA International Generally Accepted Recordkeeping Principles. Table 9 summarizes and provides a brief description of each:

Table 9. Generally Accepted Recordkeeping Principles (ARMA International, 2014)

	Principle	Description
1.	Accountability	An organization shall assign a senior executive to oversee the information governance program, delegate program responsibility to appropriate individuals, adopt policies and processes to guide staff, and ensure program auditability.
2.	Integrity	An information program shall be constructed so the records and information generated or managed by or for the organization have a reasonable and suitable guarantee of authenticity and reliability.
3.	Protection	An information governance program shall be constructed to ensure a reasonable level of protection to information that is personal or that otherwise requires protection.
4.	Compliance	An information governance program shall be constructed to comply with applicable laws and other binding authorities, as well as the organization's policies
5.	Availability	An organization shall maintain its information in a manner that ensures timely, efficient, and accurate retrieval of its information
6.	Retention	An organization shall retain its information for an appropriate time, taking into account all operational, legal, regulatory, and fiscal requirements, and those of all relevant binding authorities
7.	Disposition	An organization shall provide secure and appropriate disposition of information in accordance with its policies, and applicable laws, regulations, and other binding authorities
8.	Transparency	An organization shall document its policies, processes, and activities, including its information governance program, in a manner that is available to an understood by staff and appropriate interested parties

Based on our understanding of world history, there's the assumption that for thousands of years, societies have dealt with these types of concerns and principles when managing and caring for records. Each of these principles should be equally considered when examining the effectiveness of records management program. However, the Air Force Records Management program is primarily focused upon only two of these principles: accountability and compliance. The other six principles including integrity, protection, availability, retention, disposition, and transparency are often cited as problematic in USAF environments.

The National Archives and Records Administration (NARA), the organization responsible for providing national RM principles has received much criticism for being disconnected from reality and fostering a state of disillusionment in regards to how organizations should operate with regards to RM (SME#1, 2014). NARA itself has received multiple write-ups in their organization from Inspector Generals and the Government Accounting Office (GAO) who recognize the agency cannot organize its own internal records according to the standards they have devised, let alone instruct, or hold compliance standards, for the multiple other organizations who send them records year after year (Office of Inspector General, Oct 1, 2009-March 31, 2010)(United States Government Accounting Office, 2003). This is fact quite troubling as it highlights that even the federal organization whose sole mission is records management is largely incapable of properly conducting records management itself.

In a 2010 GAO report entitled, "Information Management: The Challenges of Managing Electronic Records," records management "has received low priority within the federal government." It goes on to explain that NARA, the federal agency

responsible for providing RM guidance, assistance, and oversight is unable to meet their own mandates. After all, electronic records are a challenge to manage because they range in complexity from single text files to highly complex formats with embedded computational formulas and dynamic content, and new formats continue to be created. The report also brings to light that there are inherent issues with having end users operate on individual desktops, in a decentralized environment. This is called the "user challenge." Most astonishing is the concept of e-mail management, the massive problem the federal government takes on where there seems there is no direct solution (Information Management: The Challenges of Managing Electronic Records, 2010). While isolated projects at the National Archives have been successful, there is no enterprise-wide architecture or system that is capable of handling records in every form as one might envision (Office of Inspector General, Oct 1, 2009-March 31, 2010). Are the problems with RM a consequence of the guidance that NARA publishes or is it simply the challenges arising from the nature information and records management?

Another aspect for the DoD to consider is the conflicting ideas presented in the Presidential memorandum regarding transparency(The White House, Office of the Press Secretary, 2011). Like other DoD agencies, security is a critical factor in the USAF and while it is important to prove good stewardship with tax dollars and oftentimes, the need for security outweighs the idea of transparency in organizations like the DoD and in particular, agencies who deal with intellectual property, to include national intelligence. So, should the DoD comply with the vision of the National Archives or does that open up federal agencies for the potential for security breaches outside their individual agency's control? Many argue federal agencies should comply, regardless. While the USAF

certainly values documentation, history, and evidence, mission comes first, which necessarily means the concentration remains on national security. National security is why certain agencies are required to have permanent records on file with NARA. However, this view of national security is based upon the need for continuity rather than just secrecy. Unfortunately, based on the specific permanency standards and despite the fact many of these records have an electronic format, NARA requires that these records be printed and stored in secure staging areas. One might consider NARA's approach to boarder on insanity considering the physical space required to store printed records. Worse, searching through printed documents of any significant amount is a time consuming activity and can be an exercise in futility. The challenging aspect is determining how often any of these are referenced by NARA or its customers or what the true intent for permanently storing these documents is.

RQ2: What are the policies, instructions, and regulations governing Records Management?

There are an enormous number of policies, instructions, regulations, manuals, and guidance governing Records Management. According to the EPA, the U.S. is the most regulated country in the world pertaining to RM (EPA Records Management Program, 2014). Appendix E contains a list of the most relevant U.S. Codes, Code of Federal Regulations, DoD, and USAF documents pertaining to RM. Despite the number of over-arching U.S. policies, laws, and statutes, each organization and individual seems to translate and implement these laws differently. This is likely based on both the abstract

nature of information and records, the culture of each organization, the mission requirements, resource limitations, and even the level of oversight, or fear invoked upon a group or individual.

The types of accountability within the system pertaining to RM are: Public Law (PL) 104-13, PL 104-16, Clinger-Cohen Act of 1996 (CCA), PL 107-347, and many more. Even AFI 33-322 says we will have working knowledge of the E-Government Act including privacy aspects, the Paperwork Reduction Act, and the Federal Information Quality Act. These laws and various policy directives require each federal agency to designate a Chief Information Officer to ensure compliance with federal information policies and implement IM to improve agency productivity, efficiency, and effectiveness (Air Force Policy Directive (AFPD) 33-3, Communications and Information, Information Management, 2008).

At the time of this publication, there are over 176 US Air Force publications and forms available that have the word “records” or “record” in their title (U.S. Air Force e-Publishing Web Site, 2014). An interesting observation is that many of these were originally published back in the 1950’s-1990’s, despite the fact much has changed in the way that records are created and disseminated since the time they were last updated.

Another important facet to realize is that in the Air Force, its communications directorates (IT directorates), and the Knowledge Management Community place much emphasis on people and offices to manage everything. Despite KM vocational training and AF-wide, computer-based training on Records Management is required for users, the definitions and understanding are so vague and ambiguous. It is a lot of responsibility to place on such a small community of individuals. According to AFI 33-322, the minimum

recommended grade for a base-level records manager must be a GS-09 or MSgt which does lead concerns as to how much power they can wield. Additionally, there is not recommendation as to the amount of understanding in the field (Air Force Instruction (AFI) 33-322, Records Management Program (for 744 CS), 2013).

Another observation is that newer mediums, such as e-mail use, text messages, instant messages, and the like are not addressed specifically in the regulations, but rather, in memorandums and in forthcoming or anticipated policies. According to the Assistant Secretary of Defense (2005, May 22), records management and e-mail systems management communities "must work together to ensure that e-mail records are captured and scheduled for disposition expeditiously so as to permit subsequent non-record e-mail destruction actions." Isn't this counter-intuitive to the most organizations, where information is so cheap, essentially, people have stopped deleting in an effort to recoup or retrieve information they may need one day? The memorandum goes on to state "Email records that meet the definition of a record as defined in DoD Directive 5015.2, "DoD Records Management Program," March 6, 2000, may be converted to a paper copy, then scheduled for disposition within approved paper-based records management procedures for email records."

Unfortunately, this is more conflicting guidance because on one hand, organizations and business are supposed to ensure good business practices with less waste, according to the Paperwork Reduction Act. However, despite this, important records (to include permanent records) and now e-mails, must be printed and sent to a NARA for permanent storage. In the same correspondence the Assistant Secretary states, "There is also an option to manage e-mail records electronically within applications that

are compliant with DoD 5015.2-STD, 'Design Criteria for Electronic Records Management (ERM) Software Applications' June 19, 2002." Unfortunately, there has been much criticism regarding this series of publications, which essentially state technological requirements and which contractors and software have been approved to accomplish the set DoD taxonomy that very few tend to adopt within their agencies and seldom apply enterprise-wide.

To add to the confusion, many DoD RM policies, specifically that stem from the DoD 5015.2 and DoD 5015.2 STD strongly urge that digital records be managed accordingly, to include the use of technological Records Management Applications (RMA's) for "speed, standardization, and efficiencies regarding Electronic Records Management (ERM)" (DoD#1, 2014). In most cases, these tools are considered unfunded mandates that Commanders and Chief Technology Officers are expected to fund from unit budgets and cause an exponential increase in costs, across the Air Force, yet simultaneously leave leaders questioning the motives behind these technology drivers, in particular: what the underlying principles of these technological systems, aside from streamlining the status quo?

Additional guidance, as listed in Chapter 2, shows there are many regulations that the AF specifically has been asked to comply with in addition to the federal level guidance. These policies and regulations include, but are not limited to:

- AFI 33-321 (Authentication of Air Force Records)
- AFI 33-322 (applicable to 744 CS Pilot Study, Records Management Program)
- AFI 33-360 (Publications and Forms Management)
- AFI 33-364 (Records Disposition—Procedures and Responsibilities)

- AFRIMS RDS (AF Records Information Management System, Records Disposition Schedule)
- AFMAN 33-363 (Management of Records)
- AF Form 1341(Electronic Record Inventory)
- DoD Directive 5015.2 (Records Management Program)
- DoD 5015.2 STD (Electronic Records Management Software Applications Design Criteria Standard)

The burden of collecting, reading, and understanding all of the relevant guidance is one of the problems with conducting records management in USAF environments. People are genuinely baffled at the Records Management policies and many wonder where are the inherent "spirit of the regulations" from which the requirements arise. Records Management in the Air Force fails to align with the perception of what it is, or should be, only because it fails to fill the "significant gap in the [translation and] requirements process" (Cockburn, 2001) and provides minimal to no inherent value to stakeholders, aside for inspection purposes.

RQ3: How is Records Management implemented within United States Air Force Environments?

The program labeled and understood as "The Air Force Records Management Program," is an attempt to manage information, but in many settings and situations can be a misnomer based on the manner in which the policy is written and the impracticality based on outdated ideas and practices. Units appear to be under the impression there is some intrinsic value to having compartmentalized, limited RM programs in their units,

such as good military order or becoming inspection-compliant for a small collection of records, or conducting lifecycle management for a small collection of records because it's feasible, the AF RM program seldom meets the intent or "spirit" of the regulations.

A primary source of evidence used in this research was obtained through focused interviews with a diverse set of RM stakeholders. Table 10 below identifies the nine stakeholders interviewed in this research and identifies their role.

Table 10. List of Subject Matter Experts Interviewed

Number	Role
1	Chief Technology Officer
2	Base Records Manager
3	FOIA Manager, Technical Advisor
4	Records Manager
5	Communications Directorate Director
6	Communications Directorate Representative
7	Headquarters Policy Representative
8	Inspector General Representative
9	Commander

Further, many insights were gained by simply listening to current and prior records managers, records custodians, users, communications directorate personnel, and leaders responsible for the Air Force RM program at varying unit levels and Headquarters U.S. Air Force. Resounding themes of concern involved the outdated charges as well as the responsibility of maintaining "working documents" separate from official records(SME#1, 2014)(SME#2, 2014), despite the idea that a working document could potentially transition into a record at any point in time.

Additionally, the program was deemed overly-compartmentalized as most leaders only had the manpower and resources to apply these high expectations and limiting concepts to a specific number of their records. Even ideas such as external determinations regarding the disposition of certain information, which demonstrates the

Air Force's adoption of the Lifecycle Management of information, meant that in actuality, Records Managers and KM personnel were only applying concepts to duplicate copies of information. In addition, they all seemed to have challenges pertaining to the keeping up with the amount of electronic records being created, which they referred to in gigabytes, terabytes, etc. It did not help that the regulations do not refer to records by volume, or "amounts," the way they speak. Communications directorate personnel often say phrases such as, "We manage ## megabytes/gigabytes/terabytes of data/information vs. "we have ## records in our official records repository" (SME#6, 2014). Governing directives do clearly state table and rule disposition assignment based upon individual records, by functional area, and creation date for assumed value, not the amount of electronic data space it comprises. This did not seem logical from a practicality aspect, in today's era of "big data." No matter who spoke about the AF RM program, the overall consensus was that the regulations were too vague and ambiguous for trained professionals to understand or implement. Many were based specifically on subjective interpretations. Magnifying these issues was more based upon the RM and KM community attaining the 'proper' buy-in from users in terms of compliance with the AF-mandated naming conventions, filing system, and disposition timelines. They noticed users avoided participating for the sake of compliance, so they generally sought their organizational leadership's involvement for assistance with enforcement and ensuring this "Commander's Program" was addressed in time.

Later, as the series of focused interviews continued it was realized that only a small amount of files were being pulled into the official records repositories for the Knowledge Management community to manage (SME#2, 2014). This 'pull' stemmed

from records managers and custodians abiding by pre-scheduled evaluations or compliance checks, such as IG visits and Staff Assistance Visits (SAVs).

Overall, the assumption existed these policies were too outdated to follow because they were intended for paper-based offices and systems. Prior to the case study on two communications directorates, or IT (in the civilian context) units, both organizations emphasized the fact they understand the intent may fit for legally-binding functional areas (to include legal, medical, property, equipment, and operational realms, etc.), they still chose to comply. Reason being, they wanted to be good stewards of the records entrusted upon them in accordance with the national charge that we operate in an open government, with themes of accountability, transparency, openness (SME#1, 2014)(SME#5, 2014). The hard part seemed to be translating the principles into compliance items, compliance items into technical requirements, and technical requirements into practices/processes. These practices and processes mean protecting their organizations against adverse consequences, to include failing compliance checks.

As mentioned before, a record is an abstract term. It's a subdivision of many different words to include "data," "information," "knowledge," "wisdom," "memory," "context," and "perception (Cox, 1997)." As one Records Manager said, "Even after reading the regulations, I still do not know, for sure, how to tell someone how to identify whether or not they're working with an official record [of our organization]" (SME #6). This comes as no surprise. After all, as mentioned by ARMA, "Not every country nor organization nor individual shares the same perceptions or viewpoints in regards to the management of information and/or records" (ARMA International, 2014, p. 23). Based on the definitions provided, a record can be anything and everything. SME #1 said he

felt an appropriate way to scope the definition of a record, given the allocated resources for this program, is a record is "material that provides proof, or evidence, as it pertains to policies and decisions [within the organization]" (SME#1, 2014). While this does improve the ambiguity, it still leaves room for interpretation, such as "policies and decisions at what level(s)?" It seemed as though an undertone was to keep records that would be most pertinent for outside agencies like NARA and its stakeholders to be privy to, but unfortunately, everyone agreed with the GAO reports stating the "Records Management" program is ultimately a very low priority within the DoD [and Air Force](United States Government Accounting Office, 2003) (SME#1, 2014)(SME#2, 2014)(SME#3, 2014)(SME #4, 2014)(SME#5, 2014)(SME#6, 2014)(SME#7, 2013).

In the DoD, including the USAF, the mission and people come first. Commander's Programs like the AF Records Management are generally run by a small group of professionals or an individual within a unit despite the fact the topic of interest, in this case "records," plays such an integral role in the mission and enterprise-wide. Increasing operations tempos, decreasing manpower, and changing environments are all variables that play a role in how task-saturated unit personnel are and ultimately, how the unit rearranges its priorities. Both units in the following case study admitted that their units and many others they previously worked with only focus on the RM program in preparation for IG inspections or Staff Assistance Visits (SAVs). The overarching concern, however, are their issues marrying up good business practices in their organization with the way the RM policies want business to be conducted. This mismatch is at the heart of the matter of this research effort.

In order to provide a deeper understanding of how the records management activity is actually implemented in USAF environments, the two case studies identified in Chapter 3 are now discussed and provide important insights.

Case Study: Organization A

Organization A takes its charge of managing intellectual property very seriously. It takes great pride in the petabytes of data, information, and records it managed in repositories and the fact pertinent security records are stored for retrieval, usage, and archival. Despite the fast-paced nature of the work and the agency's agility in adapt to changing technologies, they simply cannot understand the spirit of the federal guidelines in the Air Force RM program without the use of a time travel mechanism dropping them off circa 1960. Based on their mission focused on military intelligence and warfighter's needs, extreme caution is taken to ensure that they do not hinder operators any more than absolutely necessary, based on the demand for intelligence analysis. Operational requirements are demanding as is, hence abiding by regulations such as AFI 33-321 and AFI 33-322 adds to their ever-growing workload through the addition of predominantly non-value added activities.

In other words, assuming the agency becomes compliant with Air Force regulations, additional work is cast upon support personnel, as well as additional resources are required, in particular a portion of their Chief Technology Officer's portfolio, or budget. From their perspective, it is imperative that senior leaders understand these charges as unfunded mandates. An evaluation of units, AF-wide should be conducted to evaluate exactly how much is being imposed at the unit-level compared to the benefit attained. This concept applies both up and down the chain, to include

evaluating the expectations and mandates which stem from legislation and the U.S. National Archives and Records Agency (NARA).

With rising concepts such as Enterprise Content Management and everything spilled into the communications directorate since the bulk of the information is electronically-stored, leaders must prioritize mission requirements, especially amidst budget and manpower cuts, to include the constant reorganizing. It is a time when low to no-value activities must be identified, scrutinized, and nixed if possible. Organization A recognizes that, like many other USAF organization they, too, were compartmentalizing their RM program, yet the workload and the amount of information growth was increasingly exponentially and wreak havoc for KM personnel given their workload. They began searching for technological solutions especially based upon security concerns they noted. After their official records repository was transferred over to their supporting Air Force Base's network called AFNET, they noticed disturbing activity where unauthorized personnel were accessing sensitive or confidential records belonging to the agency. It was at that time, they also began transitioning their unit's informational framework (in the way their agency communicated with one another and stored data) to a cloud-based server. Because of their informational security concerns and their desire to transition forward based upon the nature of their work, they sought out technological solutions for their issues.

From an ERM standpoint, the governing regulation they consulted was the DoD 5015.2 STD. Similar to other criticism the standard has received, it appeared to be a list of mandates for the types of software to purchase. The DISA website provided a list of third-party contractors authorized to provide RMAs within the DoD. Unfortunately, this

appeared much like the law commonly referred to as Sarbanes-Oxley in the accounting realm, where contractors were attaining great wealth by promising simple compliance with guiding directive, without providing value. Organization A read the directive and because they do not utilize Microsoft-based operating systems for much of their work, they devised an in-house solution. Their goal was to create a system that treated their official records the same way they treat their working documents, especially amidst the transition to cloud-based computing. It first involved weeding out many of the commonly-accepted directives in the Air Force and using a more forward-thinking approach.

While constraints still exist in the system, to include AF-assigned disposition schedules of records, the Chief Technology Officer (CTO) understands his obligations toward federal compliance, and that his Commander/boss is ultimately responsible for the Records Management program. Because of this, Organization A created a list of requirements, developed a "technology agnostic" system to automate these regulations, conducted working groups to understand users' needs and incorporated solutions, gave the system the ability to learn/tailor processes, but most importantly, protected their records and information. Organization A nicknamed this system "WebERM" (SME#1, 2014)(SME#2, 2014).

Like many other organizations who feel there is a "disconnect" between NARA and reality, they feel NARA is " stuck" in a generation preceding the one in which today's users exist in, they do plan to incorporate many of their mandates or seek out waivers for the future.

Because of this extreme change, it was important that Organization A seek out the true intent of the regulations and get the word out for the other units, as well. The main way to do this is by incorporating useful and evolving variations of records management practices and principles into their system, which is currently underway.

By creating a technology-agnostic system, no one company or contractor would "get rich" off the system and instead, value will be added by decreasing the amount of manpower required to run the system, keep up with the amount of records created, and essentially, not worry so much about security or storage limitations.

The first step Organization A took in this charge was to learn more about current policies, discuss with other forward-thinking agencies, and decide the requirements, from the legal, technical, and resource-driven standpoints. It was critical that the unit scope their project in accordance with a resource-based perspective because otherwise, the RM program could easily get out of hand (SME#1, 2014). In an effort to help others, they wanted their journey recorded so others could relate and seek the same progress and change as they had in mind.

When Organization A first questioned the "spirit of the regulations," they suddenly understood their vast expectation and that every generation seems to struggle with similar charges, just different mediums. The way they wanted to contribute to ensuring a better program was to decrease the amount of manpower required to conduct RM and ask what is the least amount of effort users could apply to the system while still ensuring compliance from an organizational level. However, they did not know whether or not this idea met the true "spirit of the regulations." They realized that while compliance is important, perhaps there were places where value could be added to the

system, thus making it head a different direction regarding the way intellectual property should be treated.

During their latest inspection, inspectors rated Organization A's program as an Excellent based on the agency's futuristic approach. By doing something with their RM program, this unit is already raising the bar. They plan to allow minimal effort for users to input and retrieve information into the WebERM system. From an e-mail standpoint, users simply right click on e-mails or information that is perceived as an "official record," and using pre-loaded categorization options, choose the corresponding label.

What is beneficial in Organization A's situation is the cohesion between the Communications section, the agency (or base-level) Records Manager, and the FOIA officer's cooperation in working on the RM requirements for the agency. Based on Air Force Instruction 33-322, the minimum civilian grade and military rank for a base-level Records Manager is GS-09 and Master Sergeant, which does bring to light the question about how much power these managers wield. In this case, a close working relationship with their leadership and understanding of the charge at hand is important to realize. Fortunately, all three of these positions felt that while compliance was critical for their stakeholders (themselves and their leadership), the goal was perhaps not to follow each and every regulation to a t, but to meet the intent of the regulations while burdening their actual workforce as little as possible for compliance purposes.

Until the system is actively on-line, cloud-based, and secure, it will be interesting to see what incentives arise for users to participate in the RM process. The program, in general, still has little to no value inherent to individuals inputting data into the system. It is simply protecting the USAF's interests, according to policy. Until this system is tested

and stakeholders are willing to participate, disposition schedules for the RM program do not necessarily align with the needs of this organization's community. After all, if NARA deems their records as "permanent records," why is Organization A confined by AF-level disposition schedules for their users? It certainly is an irony. As good stewards, we must protect the interests of our agencies via an altruistic approach as opposed to a simple compliance check.

Organization A understood the premise that there are many different perspectives by which to view records, but was there a way to bridge the gap between what they felt obligated to do out of compliance, their internal mission, serving the organization, and operating with integrity and continuous improvement? The answer came in several interesting forms. The first was the realization that the RM principles (per ARMA), although they captured the "spirit of the regulations," had no definitive end states, nor were they truly measurable/quantifiable. Add this to the fact the AF RM program is also more of a qualitative measuring scale and this was double trouble. As Kulak et al. wrote, these types of requests for users to incorporate into a system are called non-functional requirements. "Non-functional requirements can be things like archival, auditability, authentication, availability, compatibility, data integrity, leveragability, maintainability, personalization, privacy, reliability, robustness, scalability, upgradeability, usability/achievability, and they, like many of them, contribute to the usefulness of a system." Users generally want all these "magically" fulfilled without additional work, but the opposite is true and non-functional requirements often cost more than ever anticipated. "Infinite anything will cost an infinite amount." (Kulak & Guiney, 2004). This concept is proven time and time again in fields such as systems engineering and

software development, they are called the –alities and –ilities, or the "fuzzy factors," which are inherently subjective and very seldom correlated with any specific or universal measurement criterion. They are ideas without limits and very few address resources. Because of this unconceivable disconnect, the question arises, then why do these "fuzzy factors," or philosophical ideas geared towards the "sky's the limit" exist as our nation's expectations for records management? Who, or what, is the motivation behind the governance, who is responsible for the policies that exist today?

In order to understand, and interesting discovery came about in an article published in the Information Management Journal entitled: "Records Management and Archives: Finding Common Ground (Myburgh, 2005)." In order to understand the broader picture, the author explains three critical lenses by which to understand include archival, records management, and Information Technology (IT) perspectives.

Archives vs. Records Management

There are overarching similarities between an archival viewpoint and RM viewpoint. Both:

a. Are called upon to identify which documents/records they will manage
b. Need to be careful about maintaining the physical and intellectual integrity of the documents in their care
c. Describe and arrange records to provide access as well as contextual information
d. Observe necessary legislation regarding disposal, privacy, intellectual property, and other issues
e. Maintain the physical- including digital – condition of records.

The differences in these two standpoints stem from cultural, societal, and historical dimensions(Myburgh, 2005). For example, archives have a political nature associated with them, therefore meaning the institution behind its existence, albeit government or business organization, provides it as a model for preservation. This suggests the keeping of the records is to support the dominant position, the metanarrative, or the status quo. Records management has emerged from the "modernist, late-capitalist philosophy of management" in both business and government and generally emphasizes efficiency, productivity, competitive advantage, strategic value, increase for profits, and avoidance of loss. Managing records is a critical component of business processes, in the context of workflow, and is based on administrative and legal necessity (Myburgh, 2005).

What this ultimately demonstrates is that evidence in the archival sense is the passive ability of documents and objects and their associated contexts to provide insight into the processes, activities, and events that led to their creation for legal, historical, archaeological, and other purposes. Meanwhile, evidence for records managers implies records with sufficient integrity to be admissible in a court of law. This integrity generally stem from legal, fiscal, and administrative means.

According to research, a great majority of archivists have university degrees, as well as post-graduate education while the majority of records managers possessed primarily vocational training (Myburgh, 2005). Strangely enough, the organizational status and authority of records managers varies greatly from one employer to another, both in the public and private sectors, as well as in different areas of the world. Generally speaking, records managers focus predominantly on serving the organization and archivists work together to span political, economic, social, and cultural milieu in

order to serve society as a whole. In essence, it's the altruism involved and the ability to the concept of "think globally, and act locally" meaning a focus on social responsibilities and mission implementation. Table 11 outlines the differences between an archival and records management lens.

Table 11. Archive vs. Records Management Perspectives

Archives	**Records Management**
Political in nature, "the institution behind its existence, albeit government or business organization…"	Emerged from "modernist, late-capitalist philosophy of management," in both business and government
Provides model for preservation	Emphasizes efficiency, productivity, competitive advantage, strategic value, and avoidance of loss
Passive ability of documents and objects and associated contexts to provide insight (legal, historical, archaeological, or other purposes)	Critical component of business processes & implies sufficient integrity (for legal, fiscal, and administrative means)
Majority of archivists have university degrees as well as post-graduate education	Majority of records managers possess primarily vocational training
Archivists span the political, economic, social, & cultural milieu to serve society as a whole	Records managers focus predominantly on serving the organization they belong to

This huge differential is much more than the common disconnect between a strategic vs. a practical perspective. Abstract laws/mandates are one thing, but boundless concepts which aim for ideological approaches such as being responsible for the future of America, attaining good order and discipline, transparency, and more to ensure openness and freedom via the preservation of history is another. Philosopher Immanuel Kant noted in his work, there is oftentimes a vast difference between how things should be and the way they are and this was no different. So, how can these resounding, unattainable charges, yet constant battles to ensure structure and flexibility be tied into today's Information Age of "Big Data?"

Information Technology Perspective

Because Organization A was a communications, or IT, directorate, it was important to understand what their perspective was, as well. This was based on the fact that today's records managers and archivists are managing digital documents, which can essentially be created by an "enormous range of people, anytime, anywhere," these records now raise issues of privacy, security, preservation, intellectual property, surveillance, and access. Despite the advances in technology, legislation and policy follow rather than leads (Myburgh, 2005).

The Information Systems Audit and Control Association (ISACA) was founded in 1967 and is well-known as a global organization dedicated to information governance, control, security, and auditing. According to the ISACA, it is important to consider specific components when creating policies or governance at an enterprise level. These are:

- Strategic Planning and Alignment
- Financial Management
- Operations
- Control Frameworks

ISACA considers the "Principles of Governance" as clear expectations, independent review, proactive change management, responsible and clear handling of business operations, and timely and accurate disclosures. See Table below for a summary.

Table 12. ISACA Primary Concerns of Enterprise Governance

Enterprise Governance Concerns	
Clear Expectations ---Clear Values --Explicit Policies & Standards --Strong Communication --Clear Strategy	Responsible and Clear Handling of Business Operations --Competent Organizational Structure --Orderly processes --Effective use of technology --Responsible asset management
Independent Review and continuous improvement	Timely and accurate disclosures
Proactive Change Management	

Clearly, from the IT lens by which this communications directorate was viewing their charges, NARA mandates provided very little clarity or content for them to process. Archival and other related terms are, indeed, nonfunctional requirements. Because the expectations and governing principles for each community differ vastly, and it appears as though Records Managers are somewhat caught in the middle of the two ends of the spectrum. This goes the same for the Knowledge Management community within the Air Force. They're simply caught between the theoretical "what-if's"—the due diligence mentality, and the "mission-first" environment that relies heavily on the amount of resources available. Add this to the expectations of the users they serve, also known as their customers and the question becomes can these different principles co-exist, or find middle ground?

RQ4: How is Records Management compliance measured within the United States Air Force?

The metrics for the aforementioned legislation, directives, guidelines, instructions, manuals, and standards are incredibly difficult to determine as to whether or not a unit is in compliance. Even if it were feasible, should it be measured at the unit's strategic level or at each individual's or users tactical level. On the same token, it's very difficult to tell

whether or not these mandates or the intent of these mandates are being met. Reason being, the Air Force Records Office is completely detached from the inspection agencies which evaluate the programs (SME#7, 2013)(SME#8, 2014). Compliance checks are conducted at the Air Force Major Command (MAJCOM) or MAJCOM-equivalent levels while the policies and program oversight occur at the Air Force Records Office, Pentagon, under the Secretary of the Air Force. When Headquarters was contacted in Sept 2013, they alluded to the idea that MAJCOM levels are responsible for inspecting their own programs, but they had not heard any concerns and said it was considered "low hanging fruit." Additionally, MAJCOMs are failing to bring items of concern or this 'infeasible, outdated' guidance to light for Headquarters to evaluate. This explains the recycling of outdated legislation, policy, and instruction. Additionally, many simply do not realize RM is context-dependent.

As common as it is for policy-makers to have little to no communication with the folks responsible for implementing their ideas, this was an interesting concept since information abundance affects so many.

The most mysterious aspect of the records management appears to be the idea of assigning strategic-level expiration dates (or dispositions) to unit-level records. While much literature is dedicated to the premise of information rot and the decrease in value with age, it's interesting for someone other than the creator or creating organization to determine how long it should be kept/maintained and this varies immensely from the way in which day-to-day information, or working documents are handled. A follow-on problem from there, is when users are concerned their records may be disposed before they are ready, they may lose trust in a specific repository. Once trust in the repository is

lost, organizational behavior will inevitably change. Fewer people participate, people make copies of their records, or they find other means by which to work without so many constraints.

Compliance: A Minimization Problem

Records Management (RM) in the Air Force is deemed a Commander's program. This mean the responsibility is ultimately on the Commander to ensure federal mandates are being met, to the best of their abilities, given their corresponding resources. Over time, it has become a minimization problem – manpower, money, workload, efforts, communication, interruptions, but maximize IG inspection rating since it's a CC program meanwhile, many of the governing principles are not understood as based solely upon or intended for paper-based work systems. The problem is that with today's constrained operating environment, RM is continually perceived as a low priority compared to everything else that is going on because of policy obsolescence. Based on this perspective, the system diagram in Figure 8 was devised.

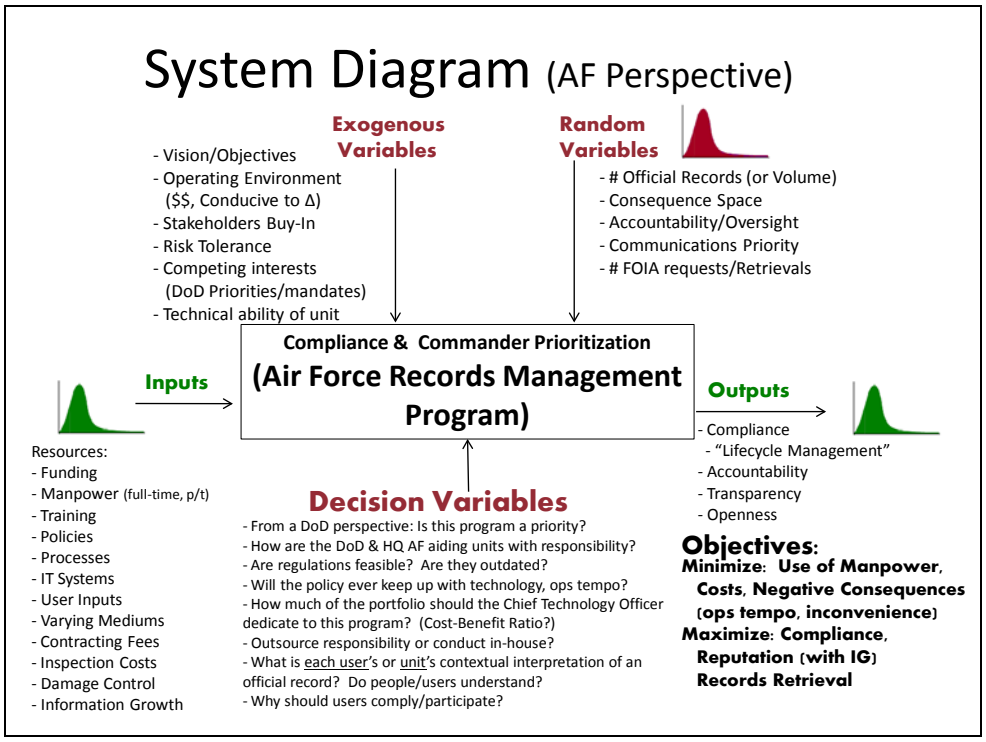


Figure 8. System Diagram for Air Force Records Management Program

This diagram showcased the overwhelming amount of "inputs," decisions, and variables surrounding the program, and showcased the output. Similar to the law of diminishing returns, in the case of the AF RM program, there are seemingly fewer and fewer returns no matter the amount of resources invested. It is no wonder that so many AF units struggle with their understanding of this program. From many leader perspectives, the objectives become minimizing associated costs, manpower, number of mandates for unit personnel, the inconvenience, the negative consequences, all while highlighting the unit's efforts via Inspector General ratings, the ability to retrieve information (this is an aspect lacking from the AF RM program), and most importantly,

keeping things in order to fill a repository to ensure compliance with federal mandates, and ultimately, keeping the commander out of jail!

Second step was to evaluate their manpower. Organization #1 provided an Excel spreadsheet with the number of Knowledge Management Professionals they had by office by the number of records stored. The first issue realized was that the number of records was not feasible to determine. Instead, the repository was listed in a volume of bytes. This raised the question, then how can each record be conducted in accordance with a document lifecycle management ideal? The test continued to see if the manpower (in terms of the number of KM personnel) correlated to the volume "amount" of data and records stored in the official data records repository. The primary caveat was that several of the KM professionals only conducted records management duties on a part-time basis, while others did on a full-time basis. Recall that the intent behind this exercise was to ask: could a resource-based view be designated? If a leader has a set amount of funds and a specific number of people, what type of RM program could be supported? Unfortunately, additional problems arose, as well. Based on the nature of ICTs, it was difficult to determine what the volumes really meant based on the assumed variation of mediums used. Hypothetically speaking, one large computer file could be 20GB, while 500 word processing documents could be 20GB. Was volume really the answer? It was also difficult to know/understand the number of personnel who added to the repository, why the data was created, and what a percentage of a volume of records really equated to, or meant. In this case, the medium would be determined based on the particular ICT used. Does a 20GB Adobe File require "more management" than 20 Word Processing

documents that 20GB? It was unclear, but no correlation was noticed regarding the number of personnel to the volume of data, as demonstrated in Table 13.

Table 13. Resource-based View, Records Management Personnel by Records Repository Managed in Volume (Bytes)

Office	# RM/KM Personnel	% Managed (by Vol/Bytes)
A	0	0.0004%
B	0	3.0454%
C	2	4.8163%
D	0	0.7542%
E	13	1.2110%
F	0	4.8511%
G	4	30.9395%
H	15	1.5113%
I	2	7.0023%
J	8	31.9648%
K	11	10.5081%
L	0	0.2613%
M	0	0.0149%
N	3	3.1196%
Total	**58**	**100%**

Additionally, because it was hard to tell how active the role the KM professionals played in this endeavor of moving official records to the official records repository, this allowed interesting literature from the 1990's to surface regarding "Resource-Based Views." In it, authors like Barney and Amit and Schoemaker state programs can be tailored to resources when the resources are "valuable, rare, difficult to imitate or substitute," or "strategic, scarce, and specialized." Because much change is occurring in the KM Community, it is difficult to determine whether or not this was the case with the KM professionals in the organization. (Priem & Butler, 2001, p. 24). The next aspect that organization A incorporated is the viewpoint that all their information and records are treated equally. While there certainly are more restrictions for specific documents,

they chose to utilize the concept of PKI certificates being required to access files or security purposes. This allowed them more accountability by allowing users to input their own information and challenged the common way of thinking, where many other agencies create fictitious file plans (with empty folders) and do not have concerns based on security. This organization is taking its charge seriously, and understand that maximum effort on the support side is required to create a minimization algorithm on the backend, to include, but not limited to, a potential decrease in the amount of man hours, based upon automation and less time required for inspection preparations. In addition, it allows for the community to access, and eventually have the ability to retrieve, or reference, what they input into the file. While a lot of planning and legwork is required upfront, they consistently ask how to better utilize resources, their manpower efforts, and prevent duplication of effort. The concern remains, however, are they creating a system by the communications directorate intended for the communications directorate and exclusive of the organization's needs or perceived value by the customers?

Cost-Benefit Analysis

One of the first points of view that was taken with this research was to ask the question: given a set of resources, in particular, manpower, is there a way to devise an RM program to match the resources available? In other words, how can a leader determine how much or how many resources to dedicate to RM activities? The perceived value may drive these decisions.

One way to begin this approach was to see if based on the manpower available in Organization A, does a correlation exist between the number of trained records managers

assigned to an office and the number of records, or amount of electronic information managed (in file size, by MB). The underlying assumption here is that the higher utilization of the records repository, the more work is being accomplished by the records managers. Therefore, the more records in the repository demonstrates the more robust the programs. Because the number of records was not available based on the retrieval mechanism, the file size was used to estimate "how much" information was stored. After an initial scrub, there was no correlation, whatsoever, between the number of records managers assigned to an office and the robustness of the program. While it was assumed the more resources added, or dedicated, to a work area, the more robust the records management program, this did not end up being true. There are several underlying issues that may explain this idea. One is perhaps in the work areas where there were fewer, or a very limited number of records managers, the office worked together to manage its information, very well understanding it can't be just one person's responsibility. Or, perhaps the RM program is realized to be a compartmentalized façade, therefore, the people who work the hardest to manage their day-to-day information, working documents, and intellectual property (records) are doing a better job as opposed to feeding an RM repository with very little value added. Or, perhaps leaders in the organization ensure management of corporate knowledge on a smaller basis by appraising the information better. Of course, many other theories or combinations of the aforementioned ideas could be plausible as well.

Based on this initial analysis, it was difficult to assume that the more resources you dedicate to a function, the more value will be added to the system or the more robust the program will be without closely evaluating additional metrics. In this case, additional

metrics were not available based on the fact that the RM repository allowed users to input information (which was usually prompted by leadership during inspection years) and then organized strictly by disposition schedule, which translates to each record's expiration date. Guidance doesn't align with the purpose. Purpose aligns with the IT principles, manage in accordance with the business practices. According to multiple Government Accounting Office (GAO) and National Archive and Records Agency (NARA) reports, cost-benefit analyses are the preferred way to communicate findings in regards to records management. One question is using the Air Force's structure of the Knowledge Management community, could a Resource-Based View (RBV) be useful in determining a scalable program in the Air Force? The fundamental of RBV is when an organization focuses on valuable and rare organizational resources, to include in-house knowledge of technology and employment of skilled personnel to provide a competitive advantage (Priem & Butler, 2001). This is a challenge, however, based on the fact the Air Force Records Office never wanted to provide precisely what their manpower numbers looked like, meaning, how big the Records Management Community is based upon the perceived amount of records created by an organization the size of the U.S. Air Force. There is reason to believe while they may know as they may not be privy to how units are utilizing these personnel. Additionally, there was no feedback from the KM community available, where those trained in KM principles were asked to see if their vocational training was adequate and if not, what would help them to ensure better RM principles in their organizations.

RQ5: How effective is the United States Air Force Records Management process at achieving the underlying principles of Records Management?

Because there is very little advantage or incentive for large masses of participants to attempt to comply with a "sky's the limit" RM ideology, this has translated to a program which is highly compartmentalized, as to not disrupt the mission or its contributors. This viewpoint is acceptable from a cultural point of view based on the minimization of resources utilized. In addition, the personnel trained in RM are oftentimes asked to manage small amounts of information, which are duplicate copies of information found elsewhere, and designated specifically for inspection purposes. On an enterprise-level, the Air Force abides by "good RM" practices by emphasizing its IT principles in the way the force functions in day-to-day operations as led by the communications directorates or communication squadrons.

Records Management: An Evolving Vision…

There is no doubt that RM can encompass useful business services that make the mission flow better however, it's important to realize that the romanticized view of the topic may not be realistic or attainable. In essence, it seems as though in many facets, it's a marketing ploy, or empty promise of a process which makes lives easier.

In corporate America, the intent of RM is often viewed as the ability to encourage sharing, ensure good decision-making via availability of quality information, ensuring the ability to stay competitive, to ensure long-term digital preservation of information, and the enticing idea, or promise, of being able to find information rapidly, as needed. The government certainly has similar needs, such as access to information prior to adversaries, and operating information operations, but due to the risk adverse nature and

fear that individuals without the right credentials will access information they should not have, everything is maintained in isolation.

The assumption is that some type of value should be added from RM, but currently, it's merely the concept of compliance. Instead, the useful aspects of managing information fall under Communications agencies and they are given the tasks of streamlining retrieval methods and have to ask the agency to participate in clean-up operations when storage constraints become an issue, which is quite frequently.

As alluded to in Chapter 2, practices and historical evaluations, from a world-wide lens demonstrate Records Management is an activity, a process, and an idea that can be best understood from the "eye of the beholder" yet it requires more of an active philosophy. Essentially, RM is a much-desired order amidst the chaos, to include protecting stakeholders' interests, and protecting information in the form of records. A multi-billion dollar entire industry is devoted to IM and its subcomponent, RM. According to the TX State Library and Archives Commission and the New York State Archives in theory, RM's guiding principle is that records should be managed and inventoried as important assets (Texas State Library and Archives Commission, 1998)(New York State Archives, 2014).

Of course, as mentioned by the two corporate sources, information and data abundance is a world-wide problem and many are trying desperately to keep up. The problem is that in real-life, anything could potentially have value, and therefore, it's oftentimes difficult to prioritize. By understanding where or how the DoD and U.S. Air Force have focused their efforts to align with the mission is important when understanding practical business rules and services records management can offer aid in

creating a resilient organization, as well as consider historical and futuristic lenses, to aid with an overall, forward-thinking approach.

Essentially, this means a transfer to IT principles. Communication directorates are responsible for the program, but based upon the number of conflicting issues and limited budgets, overhauls of the RM program do not seem warranted. However, we must remain cognizant of changing communication mediums and not necessarily going for the newest/fastest. In a way, records management is a way of intentionally slowing down and being methodical.

RQ6: What is the organizational culture of Records Management with the United States Air Force?

Spirit of the Regulations

The Air Force is unique in that it operates naturally under the values of integrity, which mean truth in accounting and accountability. The regulations state that records must be managed according and available when need be. Does this translate to accountability/transparency/accountability to stakeholders? There are a vast number of records created in the Air Force. Where is the line drawn between adequate to good management and at what point are too many resources dedicated to this charge?

Understanding Stakeholders:

From a RM standpoint, it appears as though the stakeholders are the owners of publications, the offices and individuals feeding the "system," and the SAV and IG

inspectors who deem the process as a "Commander's Program" are often afraid of the negative consequences, which is the appearance of compliance. Even the regulations begin with threat (confinement or fines for malicious destruction or intent to create fictitious records). One SME knew a first-hand account of someone who intentionally shredded records in order to prevent from having to file them, but no one else had ever heard of people getting in trouble for the destruction of records (SME #4, 2014).

In today's age, it's common for accidental deletion or technological glitches to occur and records to be deleted. As mentioned in the historical accounts of records management, every medium has its associated risks. From an AF standpoint, specific stakeholders exist in the Administration, who demand transparency based on the sense they contribute to the Department of Defense budget via tax dollars. They feel there should be adequate accountability. Because of this, RM is part of annual training that USAF federal employees require.

Records Management: Training & Talent Gap

Overall, there's a resounding question as to whether or not people, despite the annual CBT's understand the charge to them as creators of records and information. There appears to be a transition from organizational-based to individual-based record-keeping occurring and it really is important to realize no one will be able to keep up with all the records they create much less their unit creates without a team effort. Very little to no training exists to discuss naming conventions of files or associated ideas.

Case Study: Organization B

In parallel with the exploratory case study conducted for Organization A, another organization was evaluated in regards to its Records Management Program. This second organization was evaluated based upon their willingness to provide data. Reason being, to no fault of their own, Organization A, based upon the regulations, had their data organized in regards to USAF tables/rules disposition rules. This means they were not able to provide data from their official records repository in a manner conducive to understanding and analysis. This is another finding for policy-makers to be aware of with allowing outdated regulations to linger. Organization B entered the picture based on their interest in the subject matter at hand and the time they were willing to invest to better under the guiding principles of RM.

Organization B specializes in educational/academic records and material. After hosting the first two meetings with this organization, several findings were identified. The first is that Organization B recognized the AF RM Program regulations as outdated, and many even obsolete, but they chose to follow them, regardless, for the sake of compliance. This was different from Organization A which chose to ignore the ones that didn't apply to 21st century operations.

When asked about the RM guiding principle of ensuring an "inventory" of their information as an important asset, they agreed that users should do this, but explained that while they do care about enabling users to allow them to have the tools they need to operate, they have never felt that it is an IT responsibility to understand or even appraise the information that users put on their systems or supply them. When asked if they had to create a "time capsule" of their organization's most important information or records,

could they do it, they imagined there would be much debate about what was considered most important based on the perspective from which the question was evaluated. From their unique lens, they said if given a choice, they would opt to include their own information (to allow their directorate to run) and their leadership's information, which was available on the shared drive. Organization B felt their charge is to enable professors, faculty, and in-coming and out-going students to allow them the space to accomplish their missions, but they were more concerned with resource-based views, meaning once the shared drives became full, it was their duty to notify the masses, ask for participation with the clean-up, and essentially get rid of the information people no longer seemed concerned with or needed.

Because their organization only had one Records Manager, they relied on this individual to organize the official records and conduct inspections. These were very interesting concepts that led to some additional analysis. Organization B was busy balancing the demands and constantly shifting the priorities of different stakeholders, but there was something to be said about understanding the information, understanding there were limited resources, and serving as a mission enabler to their unit.

Based on what was known about the outdated policies and principles, it seemed as though an apparent dichotomy surfaced between the RM and the IT perspectives. In particular, RM seemed to focus more on history and librarian sciences and tended to serve as a sort of inconvenience for users in the organization while the IT lens was focused on serving its people as a mission enabler and transitioning to the future. Was the determination of placing the RM program simply an oversight of AF leadership? Should an IT division be responsible for RM when they are "world apart?" Obviously,

IT has a tendency to move at extraordinary speeds, while RM has a major tendency to provide "drag" in an aerospace context (SME#7, 2013). The question remained: What was wrong with this picture?

According to the New York State Archives "Where History Goes On Record," there are several information sources in order to create a RM program, "unique to your organization, and are evidence of who you are and what you do." Guide #76 in their library is entitled "Inventory and Planning: The First Steps in Records Management" (Etherington & Przybyla, 2003) and it states the idea that you have to know and understand what you have. From an AF level, this is allegedly done at a strategic level, in accordance with the AF-level system called the Air Force Records and Information Management Systems (AFRIMS). It is interesting that a strategic-level file plan with lifecycle management concepts is applied, yet unit leaders are both making determinations as to what's important and how to manage it all, at each level.

A closer evaluation of Organization B's records management was conducted. This included an evaluation of organizational behavior on three different shared drives managed by the communications directorate to see what trends could be observed. The first shared drive studied was a drive intended strictly for faculty and professors, the second drive was a 'community' shared drive, or catch-all, since everyone on campus, or via VPN, at the academic institution had access to, including students, and the third drive was the official records repository, or drive. Despite the fact only the records manager had access to this drive and managed the information, it was surprisingly more robust than many AF-level RM programs, and the institution's leadership asked faculty to feed

into the repository, to include important course curricula records, syllabi, information about who taught what and when.

Fortunately, Organization B was able to provide inventory data based both in terms of the number of files created by users and by the size of each file. In this analysis, organizational aids, such as folders and various grouping structures for records collections were omitted from the analysis. Three different shared drives with electronic files and records were evaluated based upon number of files and the size of the files. The main trends evaluated were information growth and drive composition to see if any findings would stand out in terms of the way records 'should' be identified and inventoried and there appeared to be any sort of value-based customers involvement in the program. Otherwise, it would be determined as communications directorate simply "doing something" to meet compliance for this "Commander's Program" (as noted with Organizational A, as well) without any true value (Parnell, 2006). Table 14 below shows the summary of the data storage drives analyzed in this thesis. Table 15 below shows the summary statistics for file length for each of the data storage drives analyzed.

Table 14. Data Summary for Data Storage Drives

Drive	Directories	Files	Total Bytes	Unique File Extensions
K	2,601	1,303,879	1,205,610,892,967	2,271
L	3,908	1,297,202	1,794,636,340,691	4,765
O	96	49,885	44,530,209,647	365

Table 15. Summary Statistics for File Length for Data Storage Drives

Drive	Mean	Standard Deviation	Min	Max
K	924634.03	29107930.73	1	25794165489
L	1383467.14	39034941.90	1	7417322762
O	892657.30	5076508.94	2	334370852

A summary of what was evaluated and the underlying assumptions for this analysis is provided below:

1) Electronic files were counted based upon the number of unique extensions.
2) Files were arranged based upon the calendar year the file was created. Even if a file was created in 2012, but placed on the shared drive, or repository, in 2014, it counts as part of the 2012 data.
3) File size was summed by year to determine the amount of storage space utilized.
4) Data collection ended in May 2014, so 2014 data point does not contain an entire year of data.
5) It was important to realize not all data from each year was captured. This is because communications directorate clean-up policies subject each drive to certain deletion rates, based on when students graduated, preparations for inspections, and/or limitations pertaining to community drive space.
6) The data was analyzed to determine the types of files users created and the year they were created. This data displayed using pie charts. This was accomplished by grouping files by category, which incorporate multiple extension types. These graphs provide a unique perspective of what was kept for archival purposes versus what was being created by the institution.

The limitations of the analysis included: Although the organizations maintain data for multiple years, the resources required to retrieve this data were not available. As a consequence, the data presented is a snap-shot of each drive's contents from May 2014. Ultimately, this was a single-point-in-time analysis. Data was requested to determine the creator of each file, however, the administrative support was not available to attain this

data. As a result, it was difficult to determine how many different users were contributing to the shared drive.

The main intent was to ask, "What is the organization doing and working on and how are records preserving this as the spirit of the mission or as transparency in operations?" In order to understand where specific disconnects exist, consider the following viewpoints. The first viewpoint was to compare the growth of records in each of these file-sharing repositories to literature findings which state information grows at an exponential rate. We were interested to see these findings because again, there are storage limitations in regards to shared drive space, so despite the incremental increases in storage allocation each year, was it possible. As evident by Figure 9 and Figure 10 below, the faculty shared drive demonstrated exponential growth curves based upon both the cumulative number of files created by year ($R^2 = .9751$) and the cumulative amount in gigabytes of data created ($R^2 = .9704$). This was an interesting finding and correlated perfectly to literature about information growth.

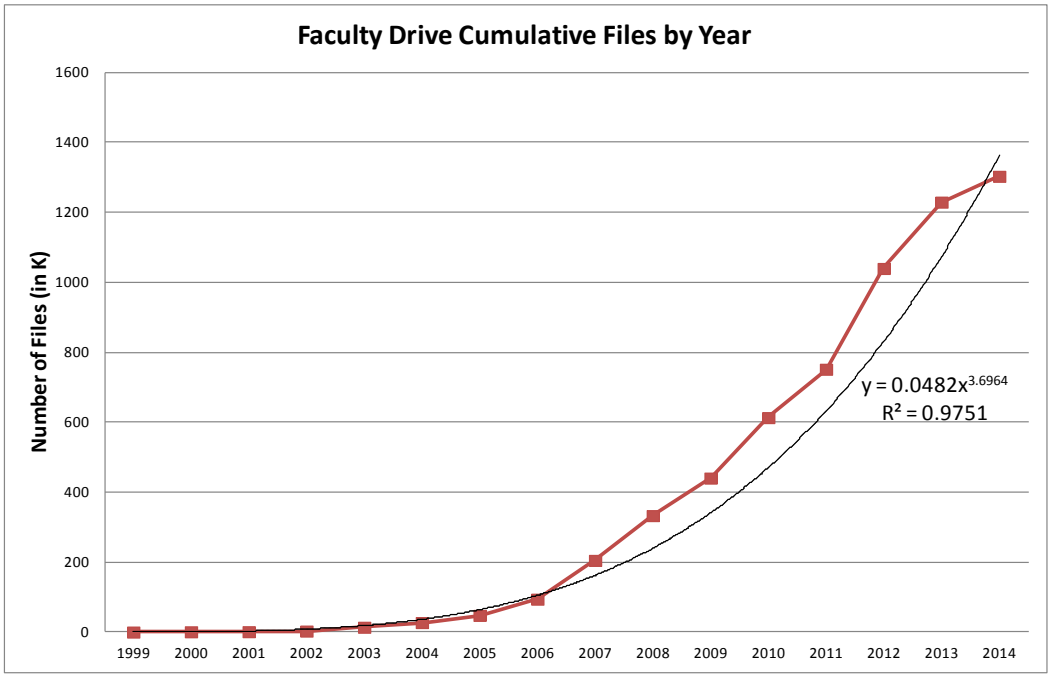


Figure 9. Faculty Drive Cumulative Number of Files as a Function of Year

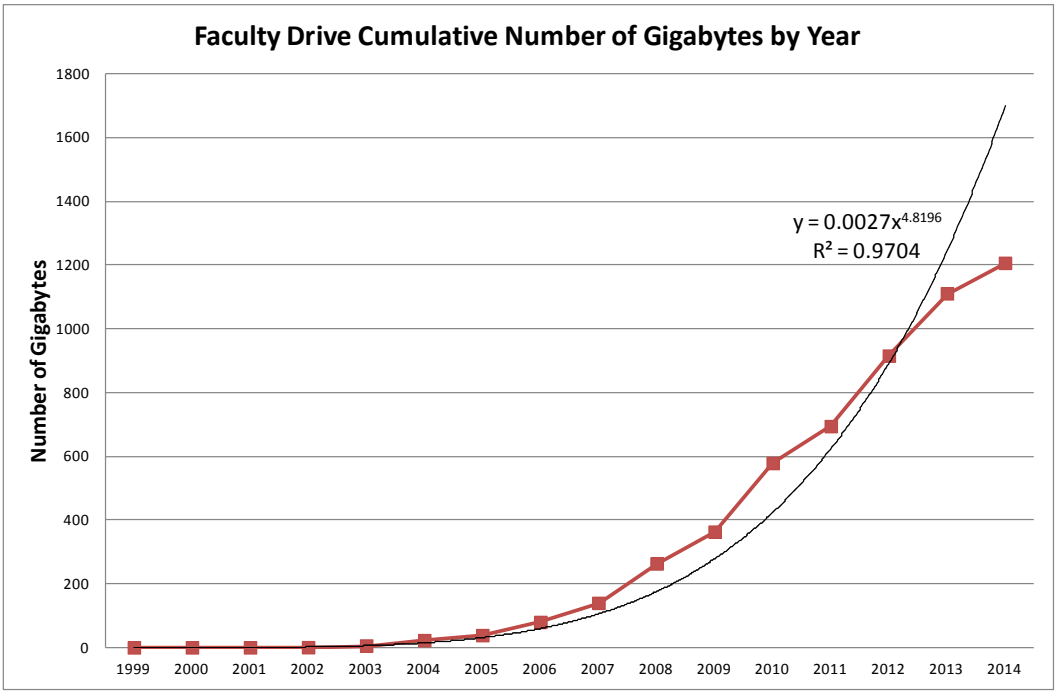


Figure 10. Faculty Drive Cumulative Number of Bytes as a Function of Year

There was an interesting trend in the data for the community, or catch-all, drive in terms of number of files and file size, as shown in Figure 11 and Figure 12. The best fit trendlines were exponential, but did not fit as well as the faculty drive. This could be attributed to the diversity of the users because this drive encompassed the student population as well as faculty and had a higher rate of deletion than the other drives. As evident by Figure 11 and Figure 12 below, the faculty shared drive demonstrated exponential growth curves based upon both the cumulative number of files created by year (R^2 = .9183) and the cumulative amount in gigabytes of data created (R^2 = .8128). Once again, the trend line was likely skewed by the incomplete data for 2014. The variation still showed an increasing trend when evaluated by both the amount of electronic GB created and number of files created with time.

Both the faculty and community drives demonstrated exponential growth over time. This aligned with the literature which states information growth occurs at an exponential rate. Note, however, that variance in the data was likely attributed to the idea the policies which govern deletion of files based upon limited storage space. In some cases, deletions may occur months after records are created, or years. These deletion patterns are a function of the transitory nature of certain customers (i.e. students) at the academic institution. Additional contributing factors to the variance in the data may be based upon the growth of the file sharing capabilities, more users, increased storage space, or end user behavior.

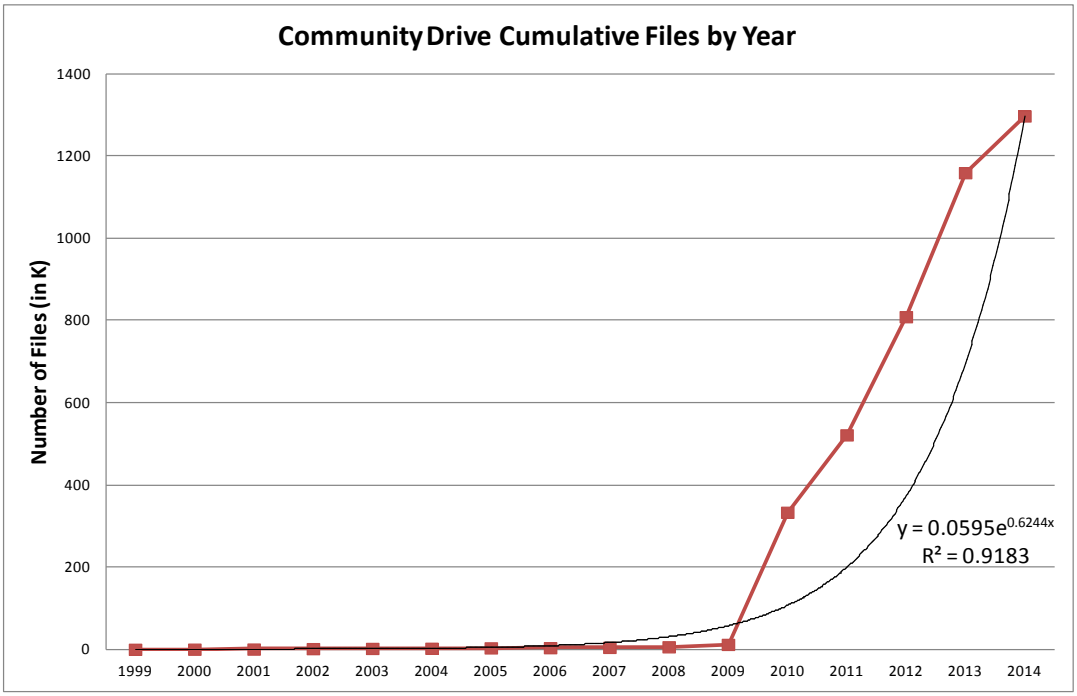


Figure 11. Community Drive Cumulative Number of Files as a Function of Year

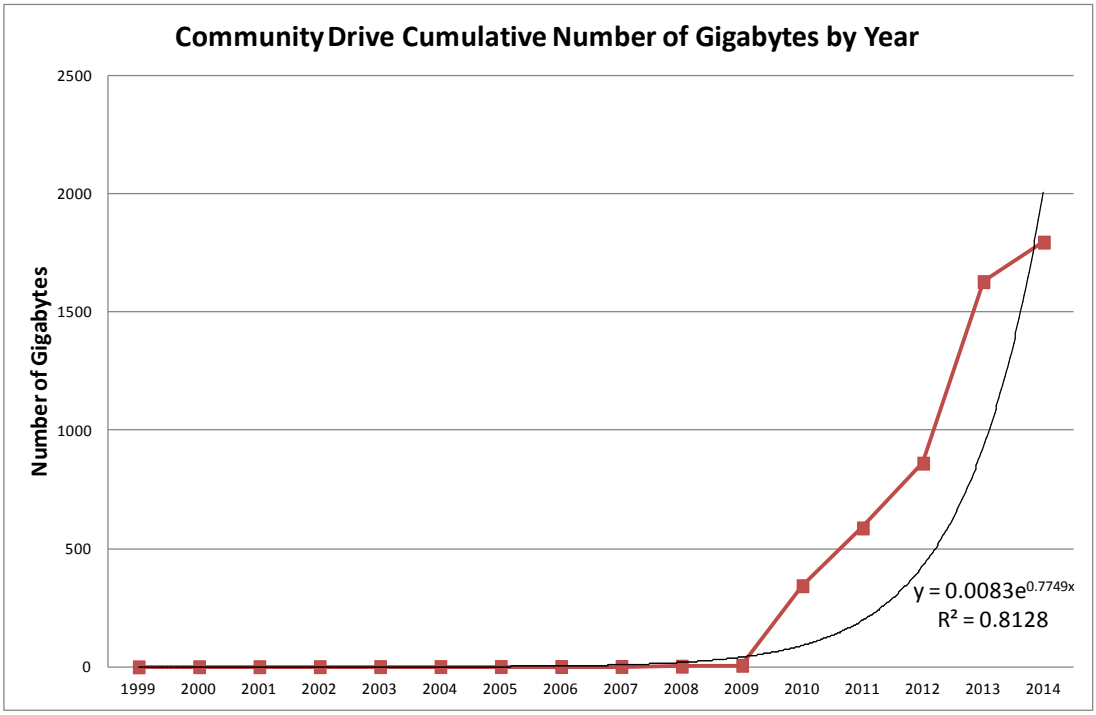


Figure 12. Community Drive Cumulative Number of Bytes as a Function of Year

One interesting finding was the records growth pattern demonstrated by the data collected for the official archives repository, as shown in Figure 13 and Figure 14. Notice that there are more dramatic increases in cumulative data (number and size) from 2008-2009 and 2011-2013. This can be explained by the fact that more data is added to the official records repository prior to and during inspection years.

This analysis explains the organizational behavior with regard to shared drive storage. This is evident by the way the communications directorate manages available storage space, the number and types of users, and the purpose of the drive.

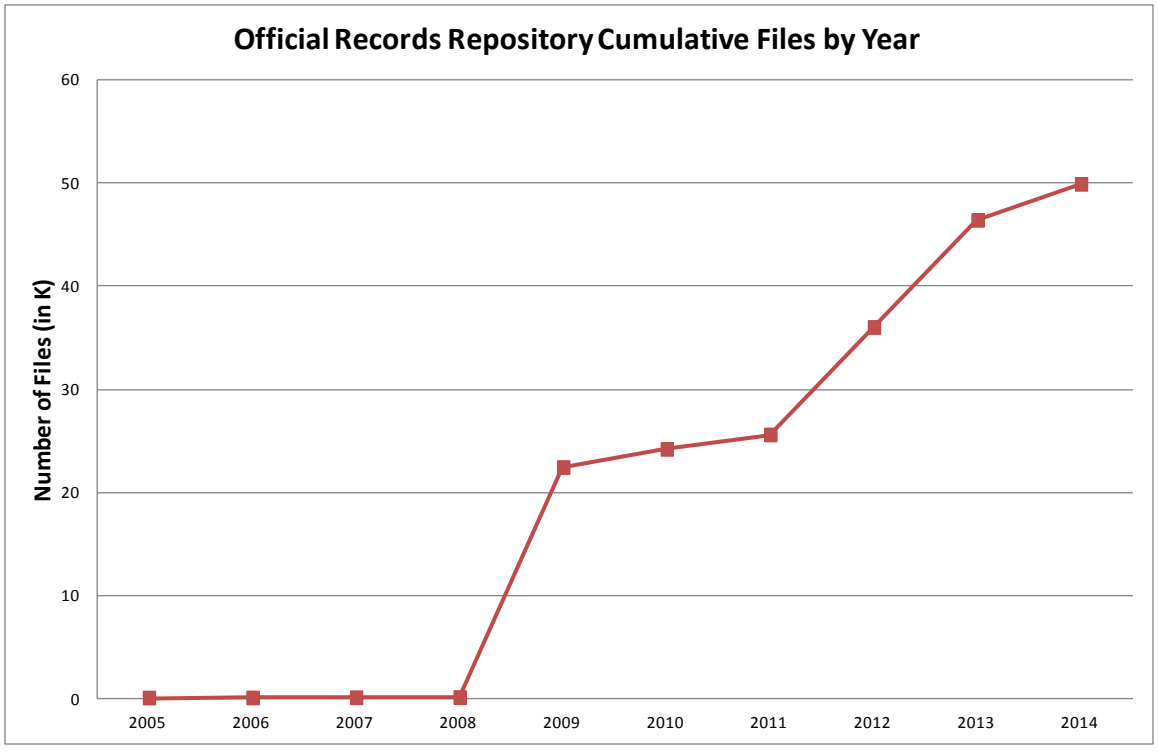


Figure 13. Official Records Repository Cumulative Number of Files as a Function of Year

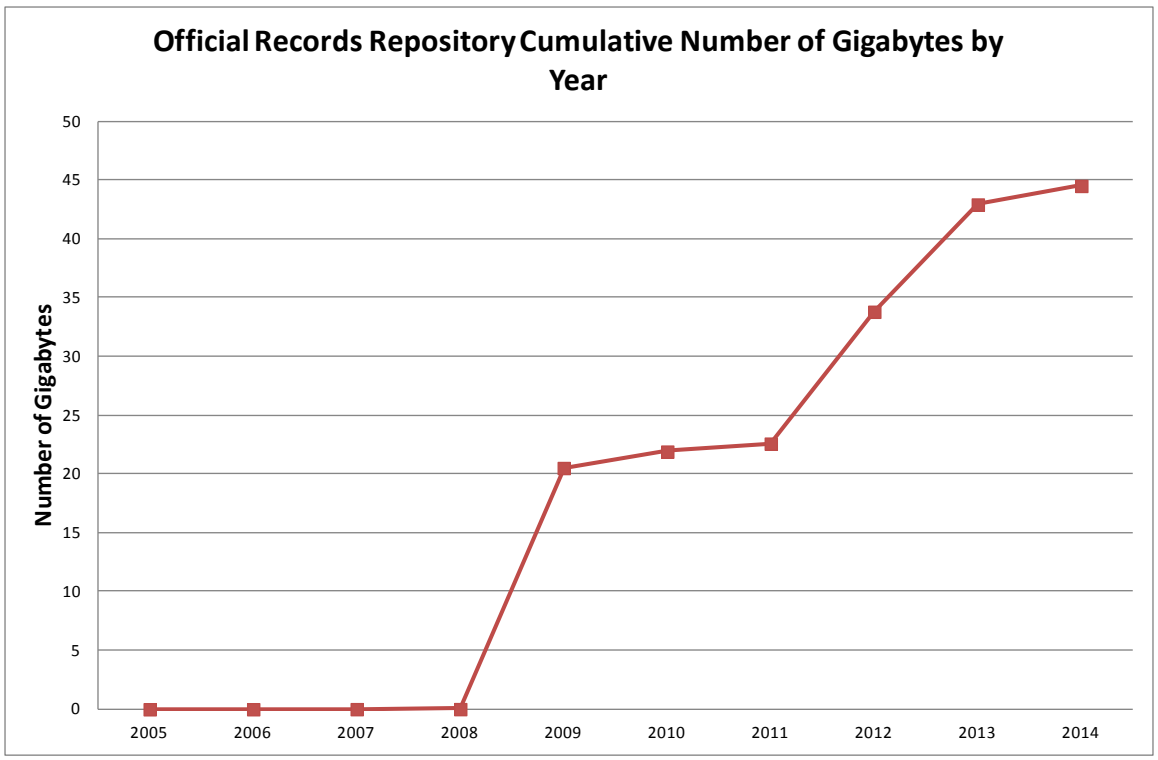


Figure 14. Official Records Repository (Drive) Cumulative Number of Bytes as a Function of Year

While it's possible to fit a trend line to the data, it doesn't add useful insight into understanding the growth of records in the official records repository because of its inherently piece-linear nature. Notice the data between the figures correlates well in terms of growth trends because of the uniformity of the type of data added to the drive. Looking at the data from another lens, Figure 15 shows the files on the official archives drive by creation date. Notice the large number of files added in the years 2006, 2009, and 2012. This confirms the earlier observation that large numbers of files are added during inspection years. Archiving and RM tend to be passive activities and the right resources and people must be available to conduct these efforts.

Another perspective by which to look at this information is by evaluating how much information is "still" left on the storage drive, based on the varying years. Despite such a large amount of data and records which are 1-5 years old, it's interesting to see what percentage of that data being archived. For this reason, one should consider what is being stored and maintained.

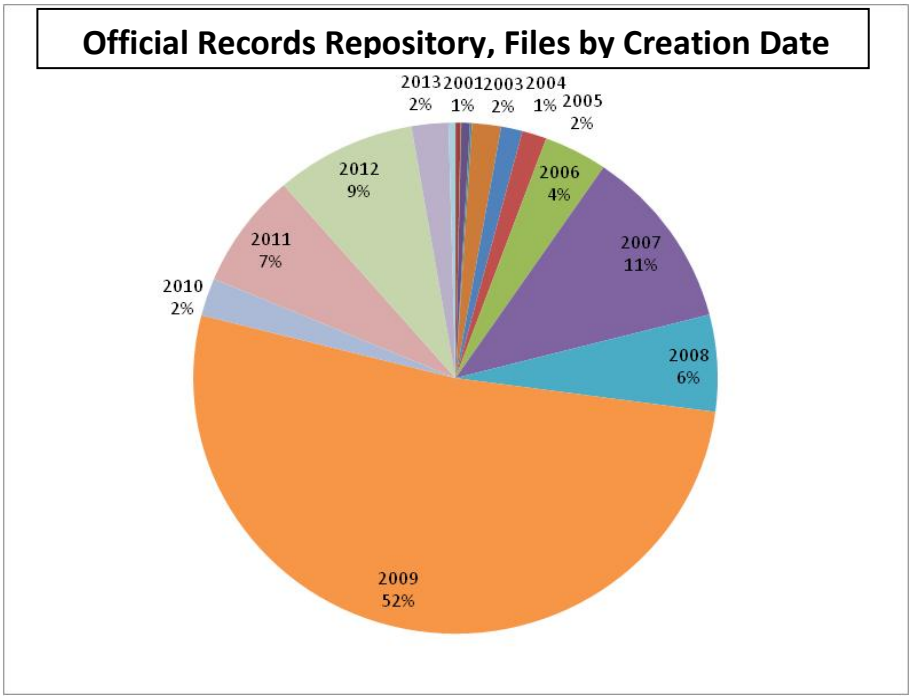


Figure 15. Official Records Repository (Drive) Files by Creation Year and File Size

We now examine the data stored on each of the drives, based upon the types of records created. In this case, the number of files and their extensions were grouped by purpose and technological medium. For example, images encompasses file extensions such as .tif, .png, ,fig, .gif, .bmp, and .jpg. Note that only the top 25 extension types

were considered for grouping purposes and the remainder was grouped into an "other" category.

Figure 16 shows the faculty drive by extension types, Figure 17 shows the community shared drive by extension type, and Figure 18 shows the official records repository by extension type. In the case of the faculty drive, the largest groupings consisted of 14% Adobe PDF files, 7% Microsoft Word files, 4% Images, and 4% electronic mail messages. A bulk of the drive, 62%, consisted of the "Other" category. This was surprising given the assumption that faculty and staff would utilize this drive for storing instruction materials such as PDF, Word, and PowerPoint files.

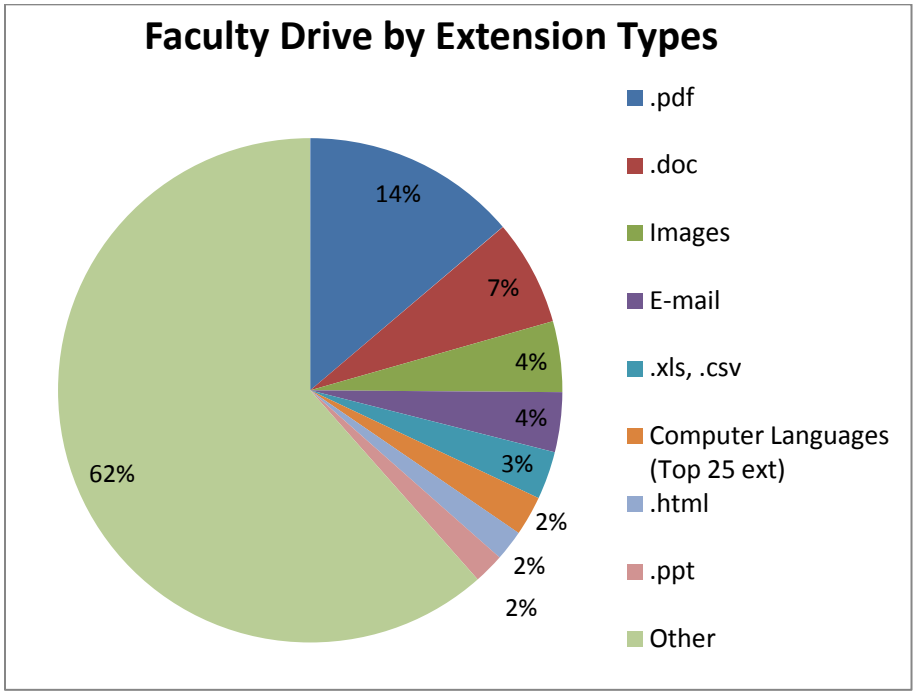


Figure 16. Faculty Shared Drive by Extension Types

In the case of the community drive shown in Figure 17, the largest groupings consisted of 17% images, 16% computer languages, 8% Adobe PDF files, and 7%

meteorological (.grb files). Over half the drive (65%) consisted of common file extensions while only 35% were captured in the "Other" category. Given the nature and usage of the community drive, the number of files types varied based upon the diverse customer usage, which included instructional courses, research activities, and student collaboration spaces.

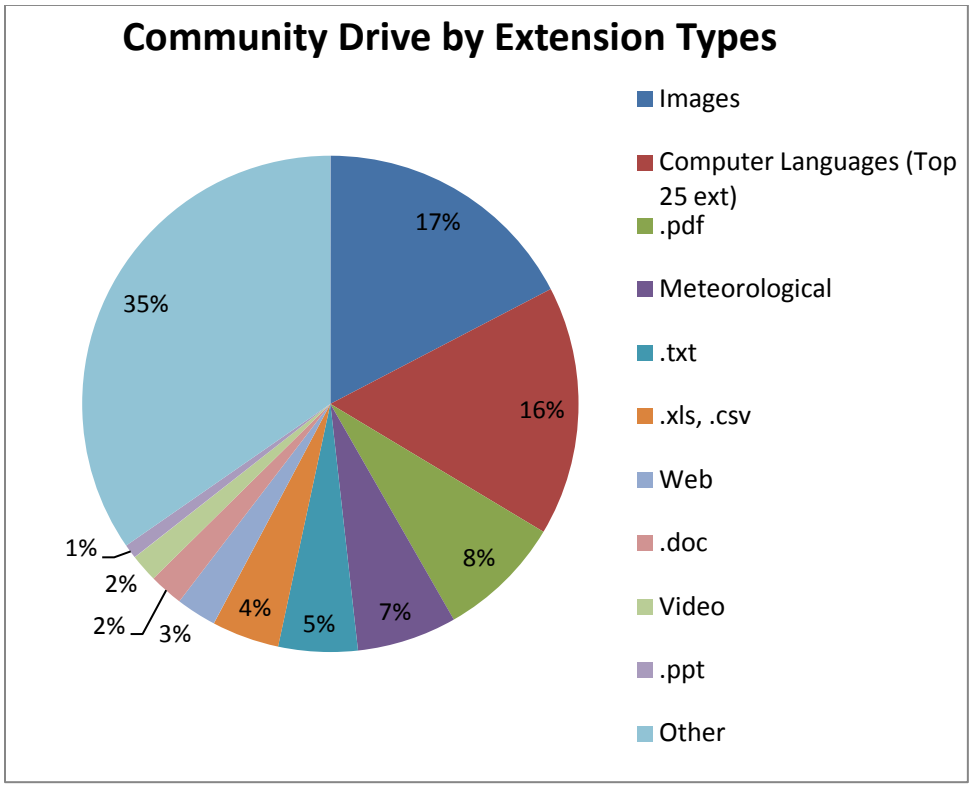


Figure 17. Community Shared Drive by Extension Types

In the case of the official records repository, as shown in Figure 18, the largest groupings consisted of 45% Adobe PDF files, 15% Microsoft Word documents, 7% computer languages, and 7% PowerPoint presentations. Only 15% were captured in the "Other" category. This program is more robust compared to other units, which manage fewer documents and create file plans strictly to pass inspection.

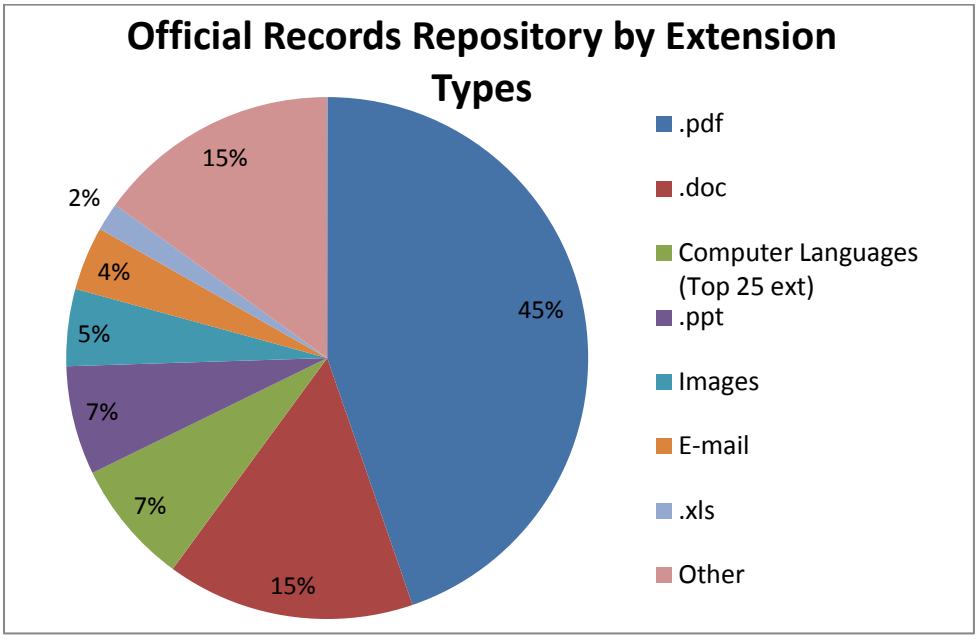


Figure 18. Official Records Repository (Drive) Files by Extension Type

The analysis of data by extension types provide unique insight into what is important to the organization as a whole. A more in-depth analysis would have included grouping the information by user role, but unfortunately, the required data was not available. IT governance principles explain how data is managed based upon who created it and what their role is within the organization hierarchy. For example, leadership files are seldom purged or deleted by the communications directorate. In contrast, files created by students are regularly viewed for deletion.

The way users create information, communicate, collaborate, store, and retrieve information should all be considerations in understanding Records Management. Equally important are the technology and the culture, with respects to records creation. As Ladd discovered in his work, culture and leadership play an integral role in fostering positive

change for topics such as knowledge transfer and records management (Ladd, 2002). Additionally, the idea of knowing, understanding, and creating a proper inventory of your information is critical to proper RM (Texas State Library and Archives Commission, 1998).

RQ7: How can Records Management be improved within the United States Air Force?

The research findings presented above clearly identify there are multiple issues which make RM difficult to conduct in USAF environments. First, the lack of good definitions makes identifying what is, and what is not, a record highly subjective. Each organization knows best what its critical records are, and should be required to enumerate a list of records that validated with leadership. As the mission evolves, so too will be what is included in the list of official records.

The way this can be viewed is as a delicate balance between structure and flexibility with the way records are handled. Structure allows for functionality in the workplace, amidst the chaos of the information world, while flexibility allows for mission requirements, in particular enabling communication changes and advancing technology.

Recommendation number one is to make the Air Force records management program similar to the RM program belonging to the Environmental Protection Agency, where RM is explained as an activity requiring accountability and maintenance, or as SME #3 said, “housekeeping.” Additionally, follow many of the state-level archive philosophies and understand the information and records which belong to an organization, then attempt to prioritize information and protect it, even if this is more

from a business RM approach. Ultimately, as the ISACA principles state, it should align with an organization's strategy. However, do keep in mind because archives generally have a political context, this is important for agencies with permanent files and topics that span different areas. Ultimately, an organization and its leadership must understand the bigger and more visionary perspectives.

Also, be cognizant of how the masses react to environments that are too structured. Allow people autonomy to function the way in which they perceive information, while staying motivated, but ensure they understand their long-term charge and the caliber of the mess they may potentially be creating by not understanding their information. Are there incentives for people finding information? Are new meta-tagging principles being applied to the realm of IM? Understand the difference between creation by one party and management and disposition of another. That first party may never let go of their own information.

Most importantly, realize that RM is a division of Information Management (IM). It has been repackaged in many ways, but it impacts People, Information, Processes, and Systems. Incorporating these concepts and ensuring respect for people and mission assurance is critical. As a 1981 research report wrote, not everyone's sole mission is records management and NARA should understand this, as should leaders at the top, and down.

As mentioned earlier, many of the ideas surrounding RM are subjective and boundless, in terms of concept attainment. Effectiveness of RM is a perceived concept and most people assess their RM diligence by assessing the following: how much chaos abounds in my unit?, Are queries able to be answered in a timely manner?, is there

"enough" organizational structure in our chaotic information realm?, what resources are available to make things better?, how critical is it to apply good order?, how effective and clear are the policies in place now?, who is the information geared for (customer base)?, and where are the potential improvement areas? Much of this boils down to the concept of continuous improvement and risk mitigation (to include human-based, technological, and environmental, etc.) While excellent capability maturity models (CMMs) pertaining to RM exist and are used by well-respected consultants who focus on state-level governments and archives (Ashley, 2013, 2014), it becomes a process and taking steps in the right direction is what matters. From there, it's a question of "how good is good enough?" Of course, the goal is to enable relevant stakeholders with the mission, but balancing the rules of the road, ideal situations, with reasonable nature and adequate resources.

On an enterprise-level, however, many archive ideologies can and should be considered. These include identifying records creation, inventorying important assets, understanding the many different perceptions and stakeholders involved in managing information, a sense of altruism, identifying accountability, and even the organizational behavior & culture of each unit. In ISO 14721, the Open Archival Information Science (OAIS) system is an archive consisting of an organization of people and systems dedicated to accepting the responsibility to preserve information and make it available for a designated community. Working together in this community focus is already done on an AF level, by communication directorates.

Results

After evaluating two units and hearing similar feedback from individuals who have been members of organizations or deployed locations with similar program qualities, it was determined that the U.S. Air Force Records Management program is often treated as a highly compartmentalized program. Based on this finding, there lies an inherent disconnect between the potential that stems from RM and archival concepts (as theories) and the potential for benefit to the organization. However, based upon the fact the program is scoped, the program is contained to a level that is reasonable and manageable from a resource perspective. Otherwise, it could easily get out of hand.

Principles

Essentially, it's finding what you need when you need it and keeping it for as long as the organization is liable. It's preserving information in an authentic manner in order to ensure it has enough validity to allow for openness and transparency. Understanding that the principles of compliance, which are compliance and accountability are of the highest concerns for the U.S. Air Force with regards to the AF Records Management Program, as opposed to the business realm that sees information as offering a competitive advantage. Each concept, while unique, has no limitations. While it can be considered a pass/fail criterion from an inspector's point of view, it should serve more as decision-making criterion and thought exercises for leaders as opposed to definitive requirements.

Realizing it's not all about RM:

While "keeping the past, preserving the authenticity of records, collecting from history-- These can be missions for people and organizations, but not all organizations view this as their charge, or have this as a personal mission (Ham, 1984) (Report to Congress, Federal Records Management: A History of Neglect, 1981).
It's essentially about managing evidence **(Cox, 1997)**.

It's more about managing information and evidence from the past, present, future while incorporating as much risk mitigation as possible as opposed to a strict focus on our nation's history, preservation, or an organization's corporate memory.

Organizations must decide what's most important – information dealing with people, places, things, or events and the potential consequences that would result. After shining the proverbial flashlight on certain dark areas, it appears as though many are more concerned with the here and now than the future, which is common. Similar to other process improvement concepts, such as Lean thinking, where special culture must provide the right ingredients for success (Murman E. , 2002), records management is a not a one-stop destination.

Travelling Down "Records Road," an Intersection of the Information Highway

There are many references to transportation when discussing documents, records, knowledge, and content management (Barry, 2002). These include phrases like information super-highway, info-bahn, and infro-strada. Joining with these analogies is the idea that RM is a path named "Records Road." Reflect back on the New Deal project, which still exists today, called the Blue Ridge Parkway. It's a 469-mile winding path constructed in the 1940's, as part of a government-effort to provide employment

during the Depression, and boost the economy. This road is set in areas of Virginia, North Carolina, and parts of Tennessee. There are much faster ways to travel, but many choose this option for its winding, curvy and beautiful scenery, as well as its historical and economic value to our country. In many regards, that's how complying with the AF RM is. It's an option in many regards. The consequences are not likely dire, but imagine this detour, the slower path, the unexpected stops, and even the speed bumps, and consider the time we make for it as an organization allowing themselves to slow down and instead of smelling the flowers, work towards historical preservation and the philosophy behind the operations. Slowing down to understand where an organization has been, where it is, and where it is going is a healthy exercise. Even though Records Road may have some outdated and confusing transportation signs, again, it's part of the journey and where your organization chooses to go is what matters most.

While organizations like NARA may believe their laws (as confusing and outdated as they are) 'rule' the land (or at least the road!), this road is different because it's about creating a better organization dedicated to serving a purpose, or a mission, and process improvement. The information super highway has fuzzy jurisdictions, as does Records Road, and it's travelled on for various lengths of time in order to get where needed.

Figure 19. Records Road on the Information Highway

In a perfect world, organizations should beg organizations like NARA and many national museums to take their most important records and preserve them as part of U.S. history, but therein lies another disconnect. When NARA demands too much or worries about not having something that may have value, then a dumping ground of information occurs. While many feel the DoD goal should be to avoid interaction with NARA as much as possible based on the additional bureaucracies, misunderstanding and limited value added. Putting them and their charge in perspective and encouraging more dialogue and discussions is what's important.

At the end of the day, it's about allowing the information to be inventoried and utilized with the small probability of preservation being required. Allow organizations to create corporate memory yearbooks. Allow people to step up as important components

of Records Information Management and determine which records are deemed most important and valuable. Some may not be realized at precisely the "right" times, but oh well. It's not worth stopping the world or hindering communication to practice good RM principles, etc. Allow communication to travel & don't hinder missions. Allow this ever-changing society to adapt and ultimately allow organizations to ensure adaptable strategies and become resilience while keeping the "bigger" picture in mind.

V. Conclusions and Recommendations

Chapter Overview

In this chapter, we discuss the conclusions, recommendations, and suggestions for future research. The exploratory case studies presented in this thesis only begins to scratch the surface of the complex issues surrounding records management in the USAF. By no means is this thesis able to provide a "silver bullet" solution to the challenges, issues, and limitations identified in this thesis regarding records management. It can, however, provide a basis for a rational discussion addressing these important issues in a constructive manner and planting the seed necessary to induce change in RM policy, instructions, and guidance that will benefit the USAF community at large. Without purposeful discussion and awareness of the challenges, we cannot expect to adapt our business processes and policies to address the growing numbers of records brought about by time and technology.

Conclusions

As the adage says, "The soft stuff is the hard stuff," and that is exactly what this research identified. While most DoD policies and directives come from the top down, records management in the information age is something that occurs at every level, simultaneously. Senior Air Force leaders must recognize the need for intentionally vague, overarching policies and continue providing generalized outlines and trusting that people will understand the intent of RM. Essentially, it is a community-based program centered around the future and possible what-ifs. Unit Commanders have responsibility to the future of their organizations and must take the reins on this important topic. While

the overlaying policy is intentionally vague in certain regards, units must take these regulations and either continue the ambiguity or tailor them to their specific needs at the time, while recognize many thought and improvement exercises are required for units and technology to transition into the future, given their resources and their willingness to consider where the unit is headed and what information is important to carry forward.

Additionally, it is important to recognize the mediums of records matter. With changing and more futuristic ICTs, concepts such as lifecycle management or RM from cradle-to-grave may not be possible. The idea of allowing obsolescence to occur naturally (via outdated mediums being left behind) is important. This is why it's critical that leaders recognize the transition from RM principles of good recordkeeping and realize the transition to IT principles and resource constraints, or doing the best with what is allocated.

Recommendations

Understand the RM principles as nonfunctional requirements, or fuzzy factors by which to strive for and not an end state. Organizations can use continuous improvement concepts to realize that RM is an on-going effort which changes as communication modes change, people change, and technology changes.

Policies and other governance should be modified so that there are fewer binding constraints and more of a balance between structure created by the information realm and flexibility, which is what missions (and life) require.

Organizations should understand the records their people create, conduct meetings to appraise and inventory their information, and work towards building RM ideas that

bridge the gap between good recordkeeping and the way people want to communicate, or secure their information.

Most importantly, understand that much like religion, everyone will have a different view, or perception of how things "should be." Some will choose more minimalistic approaches; some will disregard futuristic or altruistic concepts in order to survive the here and now. Understand that there is no one way to define official documents and that it comes down to everyone doing their best.

As far as IG teams and inspections go, leaders should be telling the IG what they deem as records and communication should occur to determine if these are the most important assets. Instead of viewing IG visits as burdens and something that needs to be prepared for, see them as reminders to conduct "clean sweeps" and assess what the organization is keeping. Ultimately, compliance in this context should not be about checking a box, but making progress to the future. Understand reasons for resistance

Significance of Research

The question "why does this matter" comes to mind. The reason is because it defines our definition of records management.

Through this research, we've identified (a) the way two diverse organizations are practicing Records Management, (b) there may not be a right or wrong way to conduct this facet of management, and (c) there is little to no value for customers in the process, aside from organizational-level compliance with federal statutes. We have not commented or judged each program, but realized that each organization, based upon their unique perspectives view information, and therefore records differently.

Recommendations for Action

It is important to realize that in the age of big data, leaders recognize the marketing ploys directed at people and the way we operate and allowing for efficiencies, the "better, faster, cheaper" ideas. There appears to be the idea that if an organization, such as the U.S. Air Force works together, to incorporate RM principles enterprise-wide, it will have a successful taxonomy and way of streamlining communication, saving money, time, and manpower, etc., but it's most important to realize the principles regarding RM are not measurable, and very seldom will there be an 'end state.' Once this concept is realized, it's up to technology and history and organizational (and individual) will power to transition us to the future.

Times certainly have changed since periods of clay tablets, bamboo scrolls, parchment, and other mediums of the like. Ultimately, it's a lesson on resilience and surviving, by apply these concepts as the organization transitions and modifies and recreates itself. Differing philosophies, theories, regarding official records, will always surface. While the vagueness of RM federal laws and Air Force regulations tends to cause confusion for the leaders and professionals intended to implement them, especially in the context of their unique mission requirements, they are ideas, the same sorts of ideas that our country is founded upon. The answer to fixing the RM program is to make the policy much more overarching, and begin identifying the most critical gems of an organization and carrying those forward, while constantly reassessing and reprioritizing. It's a nonstop job, but someone has to do it.

By developing futuristic systems and keeping historical records in context, it is recommended that organizations reflect on their knowledge management, and perhaps

create history books as they go, similar to yearbooks. Understand that "organizations scoring high on the factors of openness to change/innovation and task-oriented organizational growth…have a much higher measure for the fertility to knowledge transfer." Organizations scoring high on the factors of competition/confrontation appeared to score consistently low on three of the four measures of fertility to knowledge transfer (Ladd, 2002). Understand information rot and that information will naturally be purged by the data managers vs. the data creators.

Once the realization occurs that every organization is a work in progress-appearance doesn't mean compliance or usefulness or practicality

On the note of manpower, this is a challenge. We must recognize what value records managers and archivists can bring to an organization and the role they play in carrying best practices (and lessons learned) forward. Cautiously adopting new mediums, following good recordkeeping practices, and staying in tune with changes on the horizon will help organizations as they incorporate RM into their goals of mission assurance and identify what records they will value, in the long-term

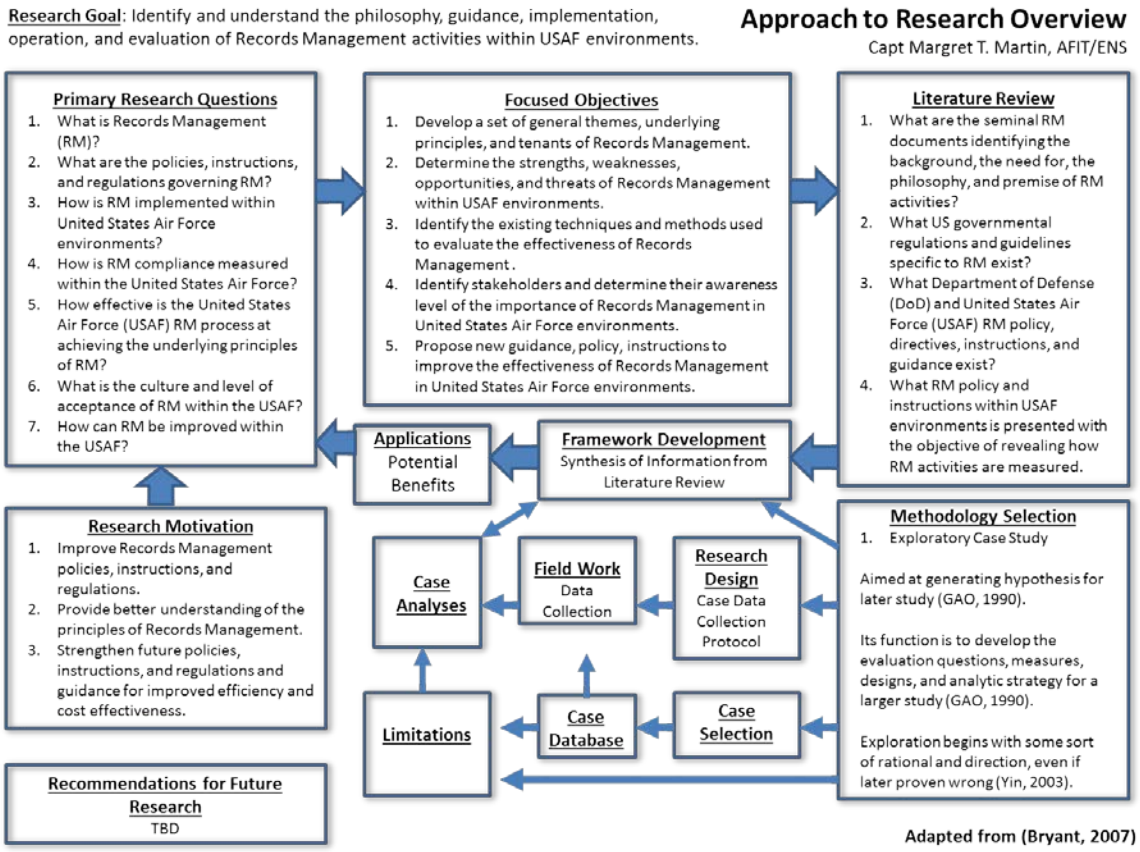
What does the organization value LONG-TERM? A picture of our past? Trends? Not if our present and future are in turmoil, right?

It's important that we avoid using geometric ideas for 'uncontainerized' volumes of information, such as records. Would we even attempt to containerize something that is infinite, like information? How do we treat boundaries and jurisdiction for unlimited operating spaces? These are all questions leaders should be considering as their organization adapts to to the future.

Closing Remarks

Applying outdated RM regulations to today's AF records is like applying geometry to "uncontainerized" liquids and not realizing that there are no angles or lines which to measure everything. It is an infinite system, with boundaries of the human mind, which adds a dimension of complexity. Add this to the speed that information flows and technology changes, and this creates quite a nebulous realm, where there may not be an apparent end state, but more of a focus on the working toward the next step. Futuristic and Continuous principles are best and linked to the lessons learned of the past. This is important in Records Management. Additionally, people are critical assets, no matter how they organize, or perceive, their information. With a focus on people, there's a focus on mission assurance.

Appendix A: Approach to Research Overview



Appendix B: Investigation Protocol

Exploratory Case Study

The USAF Records Management Program: A Paradigm Shift from Compliance to Guiding Principles in an Ever-Changing Information Environment

Capt Margret T. Martin
Air Force Institute of Technology (AFIT), Wright-Patterson AFB, OH, USA
Margret.Martin@afit.edu

Background

Records management (RM) is defined as the "…field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of records, including the processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records" (Information and documentation -- Records management -- Part 1: General, ISO/CD 15489-1: 2001). RM consists of multiple interrelated activities including identifying, classifying, prioritizing, storing, securing, archiving, preserving, retrieving, tracking and destroying records. The goal of RM tends toward providing a life-cycle strategy for handling records from the time they are created until they are eventually archived or disposed.

Today's American government operates with the expectation of heightened transparency, accountability, and accuracy in reporting. Additionally, both information and technology are evolving at intense speeds and Air Force (AF) leaders and stakeholders seemingly require more and more information and analytics in this data-driven world. The importance of having information in a timely manner is critical for good decision-making and one would assume, based on the title and expression "records management," that the U.S. Air Force "Records Management Program" within each unit would serve an important aspect in the organization, inventory, and retrieval of official information when required or requested. Unfortunately, it appears that the existing AF Records Management program is a misnomer and adds more non-value added activities and constraints to units based on Air Force regulations and interpretation of federal laws than it does usefulness. Federal "powers that be" seem disillusioned or perhaps they, too, are overwhelmed the current state of information, which may be why the DoD continues to recycle policies from decades before, causing impractical mandates and unrealistic expectations to linger.

The purpose of this thesis research is to understand the philosophy, guidance, implementation, operation, and evaluation of records management activities within USAF environments. Once understood, this research seeks to identify the strengths and

weaknesses of RM activities so that recommendations can be made to improve what is most valued by stakeholders in the context in which it is being applied. This will translate to improved efficiencies, reduced costs, and organizational acceptance.

Key Documents

- ISO 16175-1:2010, "Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 1: Overview and statement of principles"
- ISO 16175-2:2011, "Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 2: Guidelines and functional requirements for digital records management systems"
- ISO 16175-3:2010, "Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 3: Guidelines and functional requirements for records in business systems"
- ISO 30300:2011, "Information and documentation -- Management systems for records – Fundamentals and vocabulary"
- IS40, "Information: Recordkeeping (IS40)"
- ISO/CD 15489-1: 2001, "Information and documentation -- Records management -- Part 1: General"
- ISO/TR 15489-2:2001, "Information and documentation -- Records management -- Part 2: Guidelines"
- Title 36, Code of Federal Regulations, Parts 1194.21, 1194.22, 1194.31, 1220.14, 1222.10, 1222.32, 1222.50, 1228.24, 1228.270, 1228.54, 1228.58, 1228.60, 1234.2, 1234.22, 1234.24, 1234.28, 1234.30, 1234.32, 1234.34, 1236.14, and 1236.20
- Section 3301 of Title 44, United States Code, "Definition of Records"
- Section 3511 of Title 44, United States Code, "Establishment and Operation of Government Information Locator Service"
- OMB Circular A-130
- OMB Circular A-11
- DoD Directive 5015.2, "Department of Defense Records Management Program"
- National Archives and Records Administration, "Disposition of Federal Records – A Records Management Handbook"
- DoD 5015.2-STD, "Department of Defense Electronic Records Management Software Applications Design Criteria Standard"
- AFI 33-322, "Air Force Instruction 33-322, Communications and Information, Records Management Program"
- AFI 33-321, "Communications and Information, Authentication of Air Force Records (AFI 33-321)"
- AFM 33-363, "Air Force Manual 33-363, Communications and Information, Management of Records"
- AFPD 33-3, "Air Force Policy Directive 33-3, Communications and Information, Information Management (AFPD 33-363)"

Field Procedures

Setting up the interview

Begin by an initial phone call or introduction email (basic format below) to establish contact and explain the purpose of the interview. Follow up with a phone call and additional email with additional information.

[Rank] [Name],

My name is Capt Margret Martin. I am a student at the Air Force Institute of Technology conducting thesis research regarding records management. Specifically, the goal of this research is to identify and understand the philosophy, guidance, implementation, operation, and evaluation of records management activities within USAF environments. Once understood, this research seeks to identify the strengths and weaknesses of RM activities so that recommendations can be made to improve what is most valued by stakeholders in the context in which it is being applied. It is believed that these insights will provide the basis to improve records management within USAF environments by increasing efficiencies, reducing costs, and facilitating organizational acceptance.

I understand you are involved with this process and I would like to conduct an interview to gather data for my research. Please contact me at Margret.Martin@afit.edu if you are able to participate and we can set up a time convenient for you.

If you have any questions, please do not hesitate to contact me. I have also included my thesis advisor's contact information below:

Thesis Advisor: Dr. Michael Grimaila – Phone 937-255-3636 (DSN 785) x. 4800; Email - michael.grimaila@afit.edu.

Thanks,

Margret T. Martin, Capt, USAF
Masters Student, Air Force Institute of Technology (AFIT/ENS)
Margret.Martin@afit.edu

Immediately prior to the interview:

1. Review pertinent information

2. Ensure to have the following information readily available:
    a. Reference Folder
    b. Any correspondence previously made with the interviewee
    c. List of Questions / Question Answer Sheet
    d. Laptop and notepad for recording answers

At the start of the interview:

1. Researcher Introduction: "My name is Capt Margret Martin. I am a student at the Air Force Institute of Technology conducting thesis research regarding the US Air Force Records Management program."

2. Ensure attendees are familiar with the intent and concepts of the research. Read the purpose statement: "the goal of this research is to identify and understand the philosophy, guidance, implementation, operation, and evaluation of records management activities within USAF environments. Once understood, this research seeks to identify the strengths and weaknesses of RM activities so that recommendations can be made to improve what is most valued by stakeholders in the context in which it is being applied. It is believed that these insights will provide the basis to improve records management within USAF environments by increasing efficiencies, reducing costs, and facilitating organizational acceptance."

3. Describe the interview process: "This will be a semi-structured interview. I have a short list of questions, which may lead to additional questions for further research or clarification purposes. Please feel free to interject any information you feel may be useful to the research."

4. Assure anonymity: "I want to remind you that no identifying information obtained through this or subsequent interviews will be retained or reported in the final thesis. In order to complete the research effort, data collected on individual subjects may include duty title and description of/duration in current position, which will facilitate analysis and follow up for the duration of this study only. Data gathering will be focused on information specific to the USAF Records Management program policies and procedures."

5. Obtain permission for vocal recording (if applicable): "Vocal recording is a useful tool to my research so that I may accurately capture the conversation, reducing the chance for misinterpretation. Do I have your expressed permission to record this interview?"

6. Record Interviewee information and interview start time on record sheet

7. Ask the appropriate questions, depending on the interviewee

8. Provide interviewees ample time to fully articulate all comments. Wait for appropriate pauses to seek clarification and for follow-up questions. Capitalizing on the nature of the discussion, allow brainstorming of ideas. Tangential ideas can be flushed out as the comments lull.

Following the interview:

1. Record interview stop time on record sheet

2. Consolidate all information into Case Study Database (see below)

3. Follow up with an email which should contain the following elements (see template below):
    a. Short message thanking the participant for their time
    b. Request for any outstanding information necessary for completing the report
    c. Full contact information of researcher and thesis advisor
    d. Assurance they will receive a copy of draft report when complete.
    e. Reiteration of any information promised to the interviewee during the interview

    [Rank] [Name],

    Thank you for participating in the [telephone] interview conducted on [date]. The information you provided will certainly contribute to my research efforts.

    As discussed, I would appreciate your assistance in obtaining the following documents: [As applicable]

    If you have any questions, please do not hesitate to contact me.

    Thanks again,

    MARGRET T. MARTIN, Capt, USAF
    Masters Student, Air Force Institute of Technology (AFIT/ENS)
    Margret.Martin@afit.edu

A Guide for the Study Report

The final case study report will be written in the approved Air Force Institute of Technology thesis format.

Appendix C: Interview Outline

Disclaimer: The research associated with this interview is wholly academic in nature and not connected with any official Records Management reviews, initiatives, or staff visits.

Research Background: The researcher is a Captain in the United States Air Force (USAF) and a graduate student in the Operations Research (OR) program at the Air Force Institute of Technology. As part of the graduation requirements, the researcher must complete a thesis. The topic of the research is Records Management. The primary objective of this research is to:

> The purpose of this research is to examine and understand how Record Management (RM) is implemented in United States Air Force (USAF) environments in order to determine if the underlying principles and objectives of RM are actually being achieved. Further, it seeks to determine if the objectives of the USAF RM program are realistic given the current guidance, organizational culture, and resources dedicated to the RM activity. It is expected that the research findings may be used improve the efficiency and effectiveness of the RM activity.

This objective can be explored by identifying how records management is conducted in USAF environments and relating them to the underlying bedrock principles of records management found in the literature review.

Answers to the following questions should help provide greater insight that will enhance the understanding of the Records Management program within the USAF.

Interview Questions:

SECTION 1: INTERVIEW INFORMATION
1. Full Name: Margret T. Martin
2. Duty Title: Operations Research Analyst
3. Year of Experience in Current Position: 8 years

SECTION 2: RECORDS MANAGEMENT FAMILIARITY
1. What is a record?
2. What is records management?
3. What RM policies, directives, instructions, and/or guidance are you aware of?
4. Do you have a copy of this policies/directives/instructions/guidance?
5. What type of training have you received regarding RM?

SECTION 3: RECORDS MANAGEMENT IMPLEMENTATION
1. How is the official record repository implemented in your organization?
2. Are any applications used to manage the official record repository?
3. How much disk space is allocated for use in the official records repository?

4. How much disk space is used in the official records repository?
5. Are you aware of 'how many' records your unit conducts lifecycle management for?
6. Is the AF Records Management Program a priority within your organization? Why/Why not?

ADMINISTRATIVE CONTROLS
1. Who is allowed to access the official record repository?
2. Do you have access to the official record repository?
3. What restrictions are in place to limit access to the official record repository?
4. How are restrictions enforced on users of the official record repository?
5. What processes are in place to protect the integrity of the official record repository?
6. How is the official record repository backed up?
7. Has the backup plan been tested to assure it works?

LOGICAL / TECHNICAL CONTROLS
1. Who authorizes access the official record repository?
2. Are the accesses to the official record repository logged?
3. Are official record repository logs periodically audited?
4. How are changes to the official record repository managed?

PHYSICAL CONTROLS
1. Where (physically) is the official record repository located?
2. How is physical access to the official record repository controlled?
3. Who maintains the official record repository?
4. Is there a disaster recovery plan for the official record repository?
5. Has the plan been tested?
6. How do you differentiate your vital records from your official records?

SECTION 4: INFORMATION SHARING
1. Who do you share your information with? (Who depends on your information?)
2. Who do you depend on information from?
3. Have you encountered problems relating to information sharing?

Is there anything else that you would like to add, which you feel is important to this subject?

Appendix D: Data Analysis Process

On May 2, 2014, the computer technology organization ran PowerShell script on shared network drives to generate the following data files:

File Name	File Size (in Bytes)	Number of Data Lines	Number of Files Legal Dates
en-erm.csv	4,910,693	57,705	57,686
en-k.csv	125,554,025	1,464,599	1,463,231
en-l.csv	117,275,374	1,379,213	1,378,998

The first two rows of the file contain metadata.
The first row of each file contains the text "#TYPE Selected.System.IO.DirectoryInfo".
The second row of each file contains five column headers as follows:

Header	Format	Description
Name	Text	The file or (sub)directory name. Files will have non zero lengths.
Extension	Text	The filename extension. It can be null for both files and directories.
Length	Number	The file length. If this is null, then this is a (sub)directory.
LastWriteTime	Date / Time	The last time the file was written in 'MM/DD/YYYY HH:MM' format.
CreationTime	Date / Time	The time when the file or (sub)directory was created in 'MM/DD/YYYY HH:MM' format.

Microsoft Excel 2010 could not be used for analysis because it has a maximum row limit equal to 1,048,576. As a consequence, the data was imported into a Microsoft Access 2010 database. However, Access does not properly import the Date/Time format present in the csv files to the format required by the native Access Date/Time format, so the LastWriteTime and CreationTime columns first had to me imported as text fields. They were subsequently converted to the native Access Date/Time format using the following SQL query to create the ERMD table:

```
SELECT ERM.ID, ERM.Name AS FileName, ERM.Extension, ERM.length AS Length,
       CDate(ERM.LastWriteTime) AS Last, CDate(ERM.CreationTime) AS Created
INTO ERMD FROM ERM;
```

Each data set was examined to determine of the dates and times were legitimate.

Created and Last Accessed dates equal to or less than 01/01/1980 were considered bad.
Created and Last Accessed dates greater than 05/02/2014 were considered bad.

Next, illegal creation/access dates had to be excluded from the analysis. This was accomplished by creating a named view in SQL "ODC" which stands for O-Drive, with date, and cleaned. Similarly, KDC and LDC.

```
SELECT ERMD.ID, ERMD.FileName, ERMD.Extension, ERMD.Length, ERMD.Last, ERMD.Created
FROM ERMD
WHERE ERMD.Created > #01/01/1980# AND ERMD.Created < #05/03/2014# AND
      ERMD.Last > #01/01/1980# AND ERMD.Last < #05/03/2014#;
```

Next, a series of SQL queries were written to collect the data for graphing.

SQL Queries:

Files on drive (FilesODC/KDC/LDC):
```
SELECT * FROM ODC WHERE Length <> 0;
```

Directories on drive (DirectoriesODC/KDC/LDC):
```
SELECT * FROM ODC WHERE Length = 0;
```

Number of directories on drive (NumDirectoriesODC/KDC/LDC):
```
SELECT COUNT(*) AS NumDirectoriesODC FROM DirectoriesODC;
```

Number of files on drive (NumFilesODC/KDC/LDC):

```
SELECT COUNT(*) AS NumFilesODC FROM FilesODC;
```

Sum of data on drive (SumLengthFilesODC/KDC/LDC):

```
SELECT SUM(Length) AS SumLengthODC FROM FilesODC;
```

Unique file extensions and count (DistinctExtensionsODC/KDC/LDC):

```
SELECT Extension, COUNT(*) AS CountDistinctExtensions
FROM (SELECT DISTINCT (Extension), FileName FROM FilesODC) AS tmp GROUP BY Extension;
```

Number files by Year of Creation (FilesCreatedYearODC/KDC/LDC):

```
SELECT Year(Created) AS YearCreated, Count(*) AS NumFiles, SUM(Length) AS NumBytes
FROM FilesODC GROUP BY Year(Created);
```

Number files by Year and Month of Creation (FilesCreatedYearMonthODC/KDC/LDC):

```
SELECT Year(Created) AS YearCreated, Month(Created) AS MonthCreated,
       Count(*) AS NumFiles, SUM(Length) AS NumBytes FROM FilesODC GROUP BY
Year(Created), Month(Created);
```

Number files by Year of Last Accessed (FilesLastYearODC/KDC/LDC):

```
SELECT Year(Last) AS YearLast, Count(*) AS NumFiles, SUM(Length) AS NumBytes
FROM FilesODC GROUP BY Year(Last);
```

Number files by Year and Month of Last Accessed (FilesLastYearMonthODC/KDC/LDC):

```
SELECT Year(Last) AS YearLast, Month(Last) AS MonthLast, Count(*) AS NumFiles,
SUM(Length) AS NumBytes
FROM FilesODC GROUP BY Year(Last), Month(Last);
```

Data Summary:

Drive Summary:

Drive	Directories	Files	Total Bytes	Unique File Extensions
K	2,601	1,303,879	1,205,610,892,967	2,271
L	3,908	1,297,202	1,794,636,340,691	4,765
O	96	49,885	44,530,209,647	365

Summary Statistics for File Length (in Bytes):

Drive	Mean	Standard Deviation	Min	Max
K	924634.03	29107930.73	1	25794165489
L	1383467.14	39034941.90	1	7417322762
O	892657.30	5076508.94	2	334370852

The complete data is contained in the Excel spreadsheet titled “SummaryData02May2014”.

Appendix E: List of Records Management Laws & Statutes

United States Code

- 5 U.S.C. Chapter 5, Subchapter II - Administrative Procedure
  - § 552. Public information; agency rules, opinions, orders, records, and proceedings
    (Freedom of Information Act, as amended)
  - § 552a. Records maintained on individuals
    (Privacy Act of 1974, as amended)
  - § 553. Rule making
    (Administrative Procedure Act)
- 18 U.S.C. Chapter 101 - Records and Reports
  - § 2071. Concealment, removal, or mutilation generally
- 18 U.S.C. Chapter 121 - Stored Wire and Electronic Communications and Transactional Records Access
  (Electronic Communications Privacy Act of 1986)
- 28 U.S.C. Chapter 115 - Evidence; Documentary
  - § 1732. Record made in regular course of business; photographic copies
    (Uniform Photographic Copies of Business and Public Records as Evidence Act (UPA))
- 31 U.S.C. Chapter 11 - The Budget and Fiscal, Budget, and Program Information
  (Budget and Accounting Procedures Act of 1950)
- 40 U.S.C. Subtitle III - Information Technology Management
  (Clinger-Cohen Act of 1996, also known as the Information Technology Management Reform Act of 1996)
- 44 U.S.C. Chapter 21 - National Archives and Records Administration
- 44 U.S.C. Chapter 29 - Records Management by the Archivist of the United States and by the Administrator of General Services
- 44 U.S.C. Chapter 31 - Records Management by Federal Agencies
  (Federal Records Act)
- 44 U.S.C. Chapter 33 - Disposal of Records
  (Federal Records Disposal Act)
- 44 U.S.C. Chapter 35 - Coordination of Federal Information Policy
  (Paperwork Reduction Act of 1980, as amended; Paperwork Reduction Reauthorization Act of 1995; and Government Paperwork Elimination Act)

Code of Federal Regulations

- 5 CFR Chapter III, Subchapter B - OMB Directives
  - Part 1320. Controlling Paperwork Burdens on the Public
- 36 CFR Chapter XII, Subchapter B - Records Management
  - Part 1194.21 Software Applications and Operating Systems
  - Part 1194.22 Web-Based Intranet and Internet Information and Applications
  - Part 1194.31 Functional Performance Criteria
  - Part 1220. Federal Records; General
  - Part 1222. Creation and Maintenance of Federal Records
  - Part 1223. Managing Vital Records
  - Part 1224. Records Disposition Program
  - Part 1225. Scheduling Records
  - Part 1226. Implementing Disposition
  - Part 1227. General Records Schedule
  - Part 1228. Loan of Permanent and Unscheduled Records
  - Part 1229. Emergency Authorization to Destroy Records

Part 1230. Unlawful or Accidental removal, Defacing, Alteration, or Destruction of Records
Part 1231. Transfer of Records from the Custody of One Executive Agency to Another
Part 1232. Transfer of Records to Records Storage Facilities
Part 1233. Transfer, Use, and Disposition of Records in a NARA Federal Records Center
Part 1234. Facility Standards for Records Storage Facilities
Part 1235. Transfer of Records to the National Archives of the United States
Part 1236. Electronic Records Management
Part 1237. Audiovisual, Cartographic, and Related Records Management
Part 1238. Microform Records Management
Part 1239. Program Assistance and Inspections

Office of Management and Budget Circulars

- OMB Circular No. A-123 - Management's Responsibility for Internal Control
- OMB Circular No. A-130 - Management of Federal Information Resources
- OMB Circular A-11

International Standards

- ISO 16175-1:2010, "Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 1: Overview and statement of principles (ISO 16175-1:2010)"
- ISO 16175-2:2011, "Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 2: Guidelines and functional requirements for digital records management systems (ISO 16175-2:2011)"
- ISO 16175-3:2010, "Information and documentation -- Principles and functional requirements for records in electronic office environments -- Part 3: Guidelines and functional requirements for records in business systems (ISO 16175-3:2010)"
- ISO 30300:2011, "Information and documentation -- Management systems for records – Fundamentals and vocabulary (ISO 30300:2011)"
- IS40, "Information: Recordkeeping (IS40)"
- ISO/CD 15489-1: 2001, "Information and documentation -- Records management -- Part 1: General (ISO/CD 15489-1: 2001)"
- ISO/TR 15489-2:2001, "Information and documentation -- Records management -- Part 2: Guidelines (ISO 15489-2:2001)"
- International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 11179-1, "Information technologies – Metadata Registries"
- ISO 23081-1, "Information and Documentation — Records Management Processes- Metadata Records"
- ISO 8601, "Data elements and interchange formats – Information interchange – Representation of dates and times"

National Archives and Records Administration Documents

- National Archives and Records Administration (NARA), "Disposition of Federal Records – A Records Management Handbook"
- NARA Guidance, "Electronic Records Management Guidance on Methodology for Determining Agency-unique Requirements"

Department of Defense Documents

- DoD 5015.2-STD, “Department of Defense Electronic Records Management Software Applications Design Criteria Standard (DoD 5015.2-STD)”
- DoD Directive 5015.2, “Department of Defense Records Management Program”
- DoD Directive 5400.07, “DoD Freedom of Information Act (FOIA) Program”
- DoD Directive 8320.2, “Data Sharing in a Net-Centric Department of Defense”
- DoD 5400.7-R, “DoD Freedom of Information Act Program Regulation”
- DoD 5400.11-R, “Department of Defense Privacy Program”
- Assistant Secretary of Defense for Command, Control, Communications, and Intelligence Plan, “DoD Information Management (IM) Strategic Plan, Version 2.0”
- DoD Chief Information Officer Architecture, “Global Information Grid Architecture, Version 2.0” Joint Requirements Oversight Council Memorandum, “Global Information Grid Capstone Requirements Document, JROCM 134-01”
- Records Management Task Force Guidance, “Functional Baseline Requirements and Data Elements for Records Management Application Software”

United States Air Force Documents

- AFDD 3-13, “Air Force Doctrine Document 3-13: Information Operations (AFDD 3-13)”
- AFPD 33-3, “Air Force Policy Directive 33-3, Communications and Information, Information Management (AFPD 33-363)”
- AFI 33-322, “Air Force Instruction 33-322, Communications and Information, Records Management Program (AFI 33-322)”
- AFI 33-321, “Air Force Instruction 33-321, Communications and Information, Authentication of Air Force Records (AFI 33-321)”
- AFM 33-363, “Air Force Manual 33-363, Communications and Information, Management of Records (AFM 33-363)”

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Vita

Capt Margret T. Martin graduated from Samuel Clemens High School in Schertz, Texas. She graduated from Texas Tech University with a Mathematics degree in May 2005 and was commissioned via the Reserved Officer Training Corps (ROTC).

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- Medical Fitness and Resilience: A Review of Relevant Constructs, Measures, and Links to Well-Being by Regina A. Shih, Sarah O. Meadows, Margret T. Martin, RAND Project Air Force, 2011.
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14. ABSTRACT

The purpose of this research is to examine and understand how Records Management (RM) is implemented in United States Air Force (USAF) environments to determine if the underlying principles and objectives of RM are actually being achieved. To accomplish this research, exploratory case studies were performed on two representative USAF organizations: an intelligence organization and an educational organization. These case studies provide insight into how RM regulations and guidance are interpreted, implemented, and evaluated in typical USAF environments. This research revealed that in highly constrained operating environments, with regard to stringent policies, programs are limited by resources, thus becoming compartmentalized. Unless RM provides value to stakeholders, it is unlikely to be adopted on an enterprise-level. Many of the overarching theories and ideas involved in RM are highly romanticized; leaders must change their perspective to embody RM less as a set of instructions or expensive mandates and more as a focus on the "spirit of the regulations." This new perspective should ultimately shift the focus of RM away from rigid rules to a focus on the guiding principles especially amidst the ever-changing information and communication environment.

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